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This volume presents techniques and details involved in developing the management and program planning and the financial planning phases of a total planning system. Also discussed is a suggested organization for implementing a planning system. Areas emphasized under management and program planning are (1) institutional objectives, (2) planning reports and organizational units, and (3) the management planning process. The section on financial planning presents a cost model, an income model, and a discussion and model of planning-programming-budgeting. Organization for planning is discussed with respect to development of the organization, staffing and administrative requirements, and general organizational considerations. A related document is EA 001 724. (TT)

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VOLUME TWO

GUIDELINES FOR PLANNING IN COLLEGES AND UNIVERSITIES

MANAGEMENT AND FINANCIAL PLANNING

EA 001 725

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GUIDELINES FOR PLANNING IN COLLEGES AND UNIVERSITIES

VOLUME TWO · MANAGEMENT AND FINANCIAL PLANNING

Report Developed For

THE COORDINATING BOARD • TEXAS COLLEGE AND UNIVERSITY SYSTEM

By
Dr. Charles Pinnell • Project Director

and
Mr. Michael Wacholder • Associate Project Director

Texas A&M University • July 1968

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In creating the Coordinating Board, Texas College and University System, the 59th Texas Legislature directed the Board to "require and assist the public senior colleges and universities, medical and dental units, and other agencies of higher education in developing long-range plans for campus development."

An early step by the Coordinating Board in carrying out this legal mandate was to conduct a statewide survey of the status of institutional master planning in Texas. In January, 1967, the Board published a report indicating that many colleges and universities in the State did not have master plans which could be considered comprehensive in scope.

As a result, the Coordinating Board entered into a contract with Texas A&M University to prepare a model system for planning in colleges and universities. The volumes which make up the "Guidelines for Planning in Colleges and Universities" are the product of this contracted project.

Student enrollment in Texas colleges and universities will increase rapidly and dramatically during the next decade, and the importance of sound planning cannot be too strongly emphasized.

The process of planning described in these volumes focuses on the creation of a system to permit institutions to identify that which is innovative and unique about their educational program and objectives and to plan in depth within the context of their institutional objectives. Master planning is conceived in these volumes as encompassing the total decision-making framework of the institution. Under such a condition, an institutional master plan becomes a complex document in which the design and location of buildings is but one of the components.

The distribution of these "Guidelines for Planning in Colleges and Universities" by the Coordinating Board is not intended to standardize all planning procedures in Texas higher education or to force colleges and universities into a lockstep approach, physically or otherwise. Rather, the purpose of the volumes is to provide to both public and private institutions illustrations and suggested approaches. We ask that the volumes be accepted in this context.

The Coordinating Board staff expresses deep appreciation to Dr. Charles Pinnell, Michael H. Wacholder, and other members of the research staff at Texas A&M University for the work they applied directly to this study and the direction they gave to the consultants providing assistance to them.

J. K. Williams
Commissioner

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The research and development work that has gone into the preparation of "Guidelines for Planning in College and Universities" has been a most challenging and rewarding experience. The staff members of this study are sincerely grateful for the opportunity to have worked on the project and wish to express their gratitude to those who made it possible.

First, our thanks are extended to the Coordinating Board, Texas College and University System, for sponsoring this research project. The group, under the direction of Dr. Jack K. Williams, is providing significant leadership to higher education in Texas, and we are proud to have been associated with their work. Mr. Kenneth H. Ashworth, Assistant Commissioner for Federal Programs and Facilities Planning and Mr. William J. Martin, Director of Facilities Planning of the Coordinating Board Staff provided support and assistance in all aspects of the study and contributed significantly to the research effort.

Sincere appreciation is expressed to President Earl Rudder and Vice-President Wayne C. Hall of Texas A&M University for their support of this project. Many facets of the planning system were developed and tested utilizing data, staff, and facilities of Texas A&M University. The availability of this real-life laboratory contributed greatly to the research and development effort, and we are extremely grateful for the support and cooperation obtained at all administrative levels.

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DR. PAUL W. HAMELMAN
WEST VIRGINIA UNIVERSITY - Provided assistance in the area of financial planning. Prepared material on Planning-Programming-Budgeting applications to higher education.

FOREWORD

The first volume of this series entitled "Guidelines for Planning in Colleges and Universities - Planning System" outlined a planning system which included the following phases:

(1) Management and Program Planning
(2) Physical Plant Planning, and
(3) Fianacial Planning

The emphasis in the initial volume was on a brief presentation that permitted the reader to review and conceive the total planning system. The emphasis in this volume will be on the presentation of the techniques and details involved in developing the Management and Program Planning and Financial Planning phases of the total planning system and providing a discussion of a suggested organization for implementing the planning system.

The material in this volume will be presented in three separate sections. The subjects and a brief outline of the material to be discussed in each section are presented as follows:

Management and Program Planning

(1) Institutional Objectives
(2) Planning Reports - Organizational Units
(3) Management Planning Process

Organization for Planning

(1) Basic Considerations
(2) Development and Staffing
(3) Planning Position
(4) Summary

Financial Planning

(1) Cost Model
(2) Income Model
(3) Planning-Programming-Budgeting

MANAGEMENT AND PROGRAM PLANNING

SECTION 1 — MANAGEMENT AND PROGRAM PLANNING
- Institutional Objectives
- Planning Reports-Organizational Units
- Management Planning Process

SECTION 2 — ORGANIZATION FOR PLANNING
- Basic Considerations
- Development and Staffing
- Planning Position
- Summary

SECTION 3 — FINANCIAL PLANNING
- Cost Model
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- Planning-Programming-Budgeting

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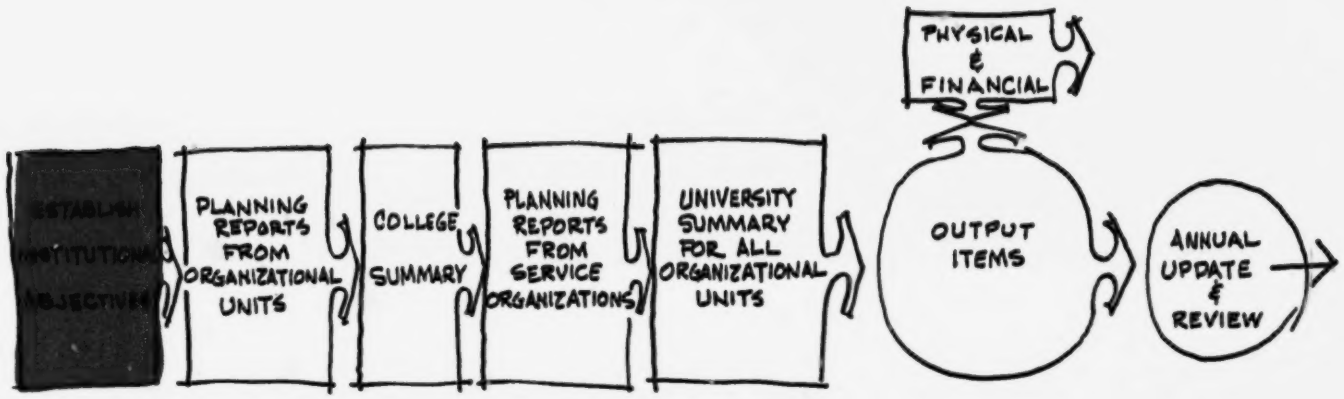
INSTITUTIONAL OBJECTIVES



One of the basic concepts of the planning system being presented is that of developing a "Management by Objective" approach to university administration and planning. Thus, there is a strong emphasis on the necessity of an institution first establishing its objectives and then making plans to accomplish these objectives.

Setting specific objectives for a university is a difficult task. It is much easier for an institution to follow the approach of trying "to be all things to all people." However, in a time of unprecedented demand for the products of a university and limited resources with which to produce these products, there must be increased emphasis placed on defining the purpose and/or role and scope of an institution. This definition will permit the development of strong programs through concentration of effort and resources and can eliminate much wasted effort and duplication.

Careful study must be given to the establishment of objectives for any given institution. This effort must tap all possible resources for information and guidance and must succeed in involving and informing all those concerned with the institution. A suggested approach to this vital process will be presented by discussing some probable steps in this task.

PLANNING RESPONSIBILITY

A considerable amount of direction and effort will need to be provided if a strong set of objectives are to be established. Thus, a basic step in this process should be the assignment of the overall planning responsibility for an institution to one person. This person with the proper staff assistance would then direct the effort required to establish specific university objectives. A suggested organization for this planning responsibility will be discussed in detail in another section of this volume.

FACT-FINDING STUDY

An initial study should be directed toward providing answers to the questions of "Who Am I" and "Where Do I Want To Go" with respect to the University. This should include an in-depth study of the background, basic purposes, and cliental of the institution.

Two basic sources of information might be termed "internal" and "external". These sources are listed as indicated with respect to the university. The "internal" information would come from faculty, staff, students, and administration of the university. These data would provide insight into the desires of this group with respect to the future of the university and would bring out problems (if such existed) that might need correction. This "internal" study also has the advantage of involving and informing a group who will later be called upon to implement desired programs.

The "external" study might be defined with respect to local, state, and national groups. The local group might consist of the population in the surrounding region. The needs of this group with respect to the university should be investigated and defined.

At the state level, concern should be given to identifying the role and scope of a given institution with respect to other colleges and universities in a state-wide system. A Coordinating Board for Higher Education provides an excellent source for this information. If a master plan for higher education in the state exists, then this document will provide basic data to assist in defining the role and scope of individual institutions. Other sources of information are alumni, industrial and civic leaders, and the general public. Assistance should be solicited from persons representing a good cross-section of all these external elements.

National problems should also be investigated with regard to areas where the university might contribute to solutions. This study should benefit from the enlistment of aid from various national sources.

The data from both the internal and external sources should finally be consolidated into report form. This permits the development of specific recommendations and eliminates extraneous material.

PRELIMINARY OBJECTIVES

After the fact-finding study has been completed and recommendations have been prepared, then this material must be translated into specific university objectives. Some of the more general items for which objectives will be desired are listed as follows:

Instruction

Instructional Programs - Definition of specific programs to be pursued during planning period.

Organization - Definition of administrative organization. Includes development of new departments, schools or colleges.

Program Level - Includes definition of objectives for undergraduate and graduate programs.

Admissions Policy - Definition of admission standards. Permits the development of specific enrollment estimates by department, college or school, and for the total university.

Special Programs - Definition of objectives for the creation or expansion of special learning centers, institutes, etc.

Research

Research Programs - Definition of specific areas where strengths exist or where development is desired. Delineation of areas of research effort.

Funding Level - Selection of goals for research funding. Total dollar volume of research per year.

Organization - Definition of organization for research administration.

Special Programs - Development of research centers or special programs.

Public Service and/or Extension

Programs - Definition of the desired programs to be continued and/or developed. This would include extension work, short courses and conferences, foreign programs, etc.

Organization - Definition of organization for administration.

In addition to the specific program areas of instruction, research, and public service, there will be a need to provide for the development of objectives in the area of general university operation. The types of objectives that might fall into this category are listed as follows:

General Operation

Student Life Programs - Definition of student life programs including such items as student activities, student governments, sports and recreation, etc.

Systems and Procedures - Definition of objectives for administrative functions. This would include such items as computer systems for administration, centralized accounting systems, automated registration, library development, etc.

Student Housing - Definition of policies on provision of student housing.

Faculty-Staff - Objectives regarding faculty-staff qualifications and benefits to be provided.

The previous list of items for objective development is not intended to be an exhaustive list but is provided merely as a sample of the type objectives that must be established. The objectives established by any given institution will be dependent upon the foresight, creative ability, and leadership of the administrative officials of that institution. The basic concept which must be grasped is the "management by objective" approach. The institutional objectives that are developed must provide the basic building blocks around which a "plan for accomplishment" can be developed.

A preliminary set of objectives must be developed as a basis for review, modification, and final development of the institutional objectives. It is suggested that a relatively small committee be assigned this task. This committee should be headed by the person who has been assigned the basic planning responsibility and should include representation from top-level administration, faculty-staff, and students.

The committee assigned to the development of the preliminary objectives would use the recommendations of the fact-finding study as its basic source of information. The major task of this committee would be to convert generalized recommendations into specific objectives that explicitly define the purpose and goals of the institution.

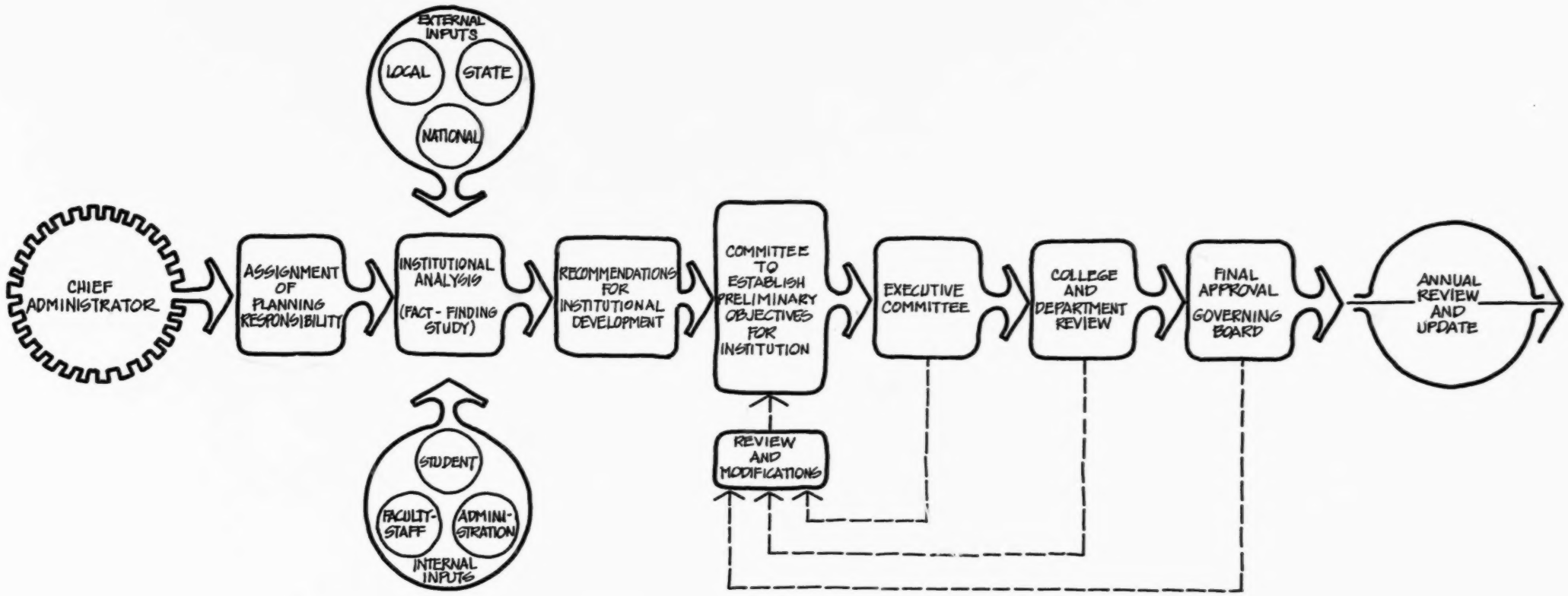
REVIEW AND MODIFICATION

After a preliminary set of objectives has been established, then they should be subjected to a thorough review by all administrative levels of the university. This review (and modification if required) of the objectives should be an iterative process which would involve and inform all personnel in the departments, college, and executive levels of the university. Modifications should be expected in order to make the objectives "workable" at all organizational levels.

TOTAL PROCESS

The total process of establishing institutional objectives that has been suggested here is illustrated graphically in Figure 1.

FIGURE 1 · INSTITUTIONAL OBJECTIVES · FORMULATION PROCESS



PLANNING REPORTS · ORGANIZATIONAL UNITS

The total program of a university results from a multiplicity of efforts conducted by the various organizational units of the institution. A concept of the Management and Program Planning Phase that will be stressed here is that of having the programs and plans of an institution evolve from programs and plans of individual organizational units.

It is impossible for one central office at the top level of an institution to do the planning for all elements of the institution. The people who will conduct the basic programs must be involved in developing plans for these programs if successful implementation and the desired attainment of objectives is to result. Coordination and direction must be provided by a central planning office but involvement of the organizational units of the institution in the planning process is a basic necessity.

In addition to the all important factors of involvement and singular effort directed toward accomplishment of objectives, the development of planning on an organizational unit basis offers the advantage of a smaller and more workable unit. It is possible to enlist aid and include detail that would not be possible if the planning effort was conducted entirely by one central office.

The basic programs of a university are (1) Instruction, (2) Research, and (3) Public Service. The objectives of these programs must be converted to a "plan for accomplishment" which in turn should generate the requirements for objective attainment. These requirements will be in terms of personnel (faculty and staff), space (offices, classrooms, labs), facilities (equipment, furniture, etc.), and funds (operating and capital) necessary to provide for the requirements as determined.

The programs of instruction, research, and public service are developed and implemented by the numerous organizational units in the university. Some of these units (academic departments, research institutes, extension service) will have primary responsibility for the programs while other units (library, physical plants, registrar, etc.) will provide a support function to aid the conduct of the programs. All of the units are vital to attaining the total objectives of the university and consume resources provided by the university.

It is logical, therefore, that "plans for accomplishment" and "requirements" must flow from the various organizational units who will actually implement or support the university's programs. Thus it was deemed necessary to develop a planning report at the level of basic organizational units and have data from these reports flow up and be combined at the college and university levels. These data when summarized at the university level would then provide a basic information source for the total planning effort.

Planning reports would be required for all organizational units. These units could be placed within two broad categories which are (1) Organizations for Program Implementation and (2) Organizations for Program Support. A brief listing for the respective categories is as follows:

I. Organizations for Program Implementation
   - A. Academic Departments
   - B. Research Institutes
   - C. Public Service Institutes

II. Organizations for Program Support
   - A. Registrar
   - B. Library
   - C. Physical Plants
   - D. Administrative Offices
   - E. Other Support Units

The order for development of the planning reports would logically require that plans for the program implementation units be developed first. The plans of these units then can be utilized to furnish a basic data input for the development of plans for the various support units.

PLANNING REPORT FORMAT

In order to accumulate the desired data from each organizational unit it is necessary to develop a report format for the submission of these data. Such a format for the planning report provides two significant advantages. First, it provides a means for describing the planning technique and indicating the planning parameters and procedures which will be important and second it establishes a desired uniformity of planning that permits the plans and requirements of various organizational units to be merged and summarized.

A planning report for an academic department would be the most comprehensive of all the organizational units since these departments could be involved in program implementation for all of the three major programs of an institution (teaching, research, and public service). A suggested planning report for academic departments would contain the following sections:

Organization Summary

This section would provide a concise presentation of the organizational structure, programs, and objectives of the organizational unit. The following information would be included:

Organizational Structure - Organization chart and descriptive material outlining the organization of the unit.
Programs - Programs in teaching, research, and extension which are being conducted or planned for introduction.
Objectives - Major objectives of the unit.

Resource Inventory

This section would provide information on the resources available in the organization to conduct its programs. This inventory would include the following items:

Faculty-Staff Data - Vita sheets on each faculty and staff member.
Space Inventory - Room-by-room listing of all space assigned to the unit.
Equipment Inventory - Listing of all major pieces of fixed equipment with information on age, condition, etc.

Historical

This section provides a historical record of past activities in teaching, research, and extension. It can be utilized as a data base for future planning projections.

Projections

This section provides projected data that will be basic to the planning process. These data are:

(1) Student Enrollment
(2) Research and Extension Efforts
(3) Teaching Effort
(4) Staff Utilization

Resource Requirements

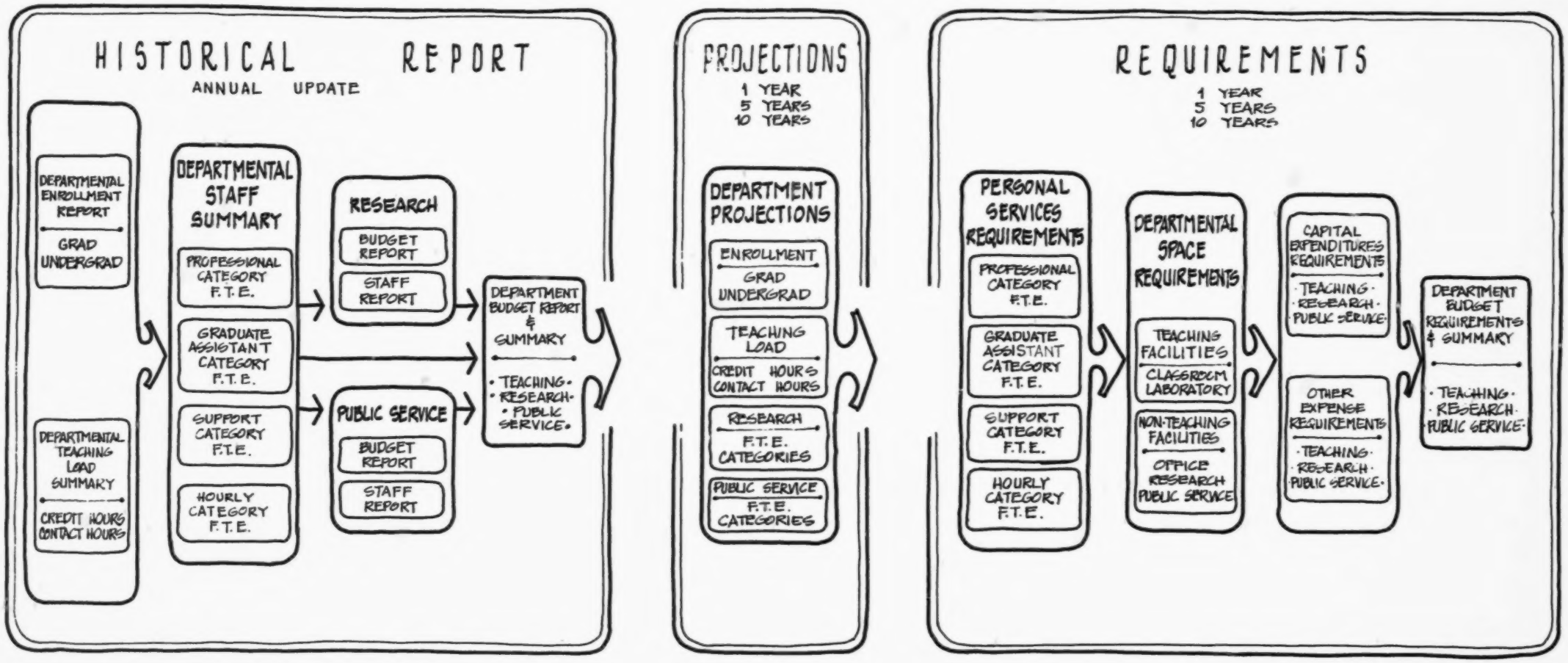
This section provides for the estimation of resource requirements. The projected items are:

(1) Faculty-Staff Requirements
(2) Teaching Facility Space Requirements
(3) Non-Teaching Facility Space Requirements
(4) Capital Expenditure Requirements
(5) Operating Expense Requirements
(6) Total Budget Requirements

EXAMPLE· DEPARTMENTAL PLANNING REPORT

This section provides an example and an outline of the specific plans of a department. The historical, projection, and resource requirements section of the academic planning report contain most of the data that must be collected and summarized. Figure 2 illustrates the basic planning process that would be utilized to complete these sections and Forms 1-26 in the appendix illustrate a suggested format for recording desired data.

FIGURE 2 · DEVELOPMENT PROCESS FOR ACADEMIC DEPARTMENT PLANNING REPORT



A specific discussion of the historical, projection, and requirement sections of the academic planning report will be presented in the following material to illustrate the data required and the techniques that can be used to develop desired data.

HISTORICAL REPORT

The purpose of this section is to provide background information on past activities of the organizational unit. In case of an academic department, data would be obtained on enrollment of departmental majors, teaching loads, research efforts, public service efforts, faculty-staff utilization, and funds. These data are basic to the operation of a department and to the development of a sound planning base.

The historical data would be updated each year and an additional year of historical data added at this time. After three or four years, a very excellent data base will be developed from which to project future activities. As historical data is added each year, it can also be compared with the forecast data for that year in order to evaluate the accuracy of planning projections.

Forms 1-12 (appendix) of the suggested academic planning report provide for the collection of historical data. The procedures for completing these forms will be briefly discussed as follows:

Form No. 1 - This form reports past enrollment in a department (departmental majors only). The data to complete this form can be obtained from enrollment data furnished by the Registrar.

Form No. 2 - This form reports past teaching efforts in terms of student credit hours and student contact hours. Information to complete this form can also be obtained from registrar reports.

Forms No. 3, No. 4, No. 5, and No. 6 - These forms report the number of faculty-staff employed in terms of Full Time Equivalents. A Full Time Equivalent (F.T.E.) is defined as a faculty or staff member who works full time for all 12 months of a fiscal year. Anyone working less than 12 months or less than full time will be reported as a percent of an F.T.E. such as O.75 F.T.E. Four categories of faculty and staff are suggested. These are defined as follows:

Professional - Instructor through Professor or equivalent research or extension ranks.
Graduate Assistants - Positions filled by graduate students.
Support - Positions such as clerical, technician, mechanic, etc.
Hourly - Position paid on an hourly basis.

All personnel should be placed within one of these four categories. Departmental budgets can be used to compute the F.T.E. value for each employee of the department.

Form No. 7 - Research is defined as an activity supported by non-teaching or non-public service funds. This would include such fund sources as contract or sponsored research, research grants, organized reserach funds and other similar sources.

Form No. 8 - Data for this form may be transferred from Forms No. 3 - No. 6.

Form No. 9 - Public service is defined to include extension courses, short course, public service activities or other similar work which can be classified under the broad term of public service.

Form No. 10 - Data may be obtained from Forms No. 3 - No. 6.

Form No. 11 - Data may be obtained from department budget plus Forms No. 7 and No. 9 for research and extension.

Form No. 12 - Summary of data on Form No. 11.

PROJECTION REPORT

This section of the planning report provides for the projection of basic planning parameters into the future. For an academic department these basic parameters are listed as follows:

(1) Enrollment
(2) Teaching Load
(3) Research Effort
(4) Public Service Effort

A form is provided (Forms 13-16 in the appendix) for projecting each of the above parameters one, five, and ten years into the future. A discussion of each of these parameters follows:

Enrollment - The data required here is in terms of departmental majors. The number of expected students for each level should be projected as illustrated in Form 13. There are numerous techniques for estimating enrollment and specific studies would have to be conducted for any given institution. The fact-finding studies and the establishment of university objectives should provide basic data for determining long-range enrollment trends. Each individual department should concern itself with establishing estimates for enrollment of departmental majors. The registrar's office and department records on students can furnish past experience and a study of conditions in each department's field of study can provide guidelines for the future.

Teaching Load - The future teaching load of a department is estimated in terms of Student Credit Hours and Student Contact Hours. Student Credit Hours can be utilized to determine faculty requirements and Student Contact Hours can be used to determine classroom and laboratory requirements.

The teaching load of any given department will result from two separate categories of students. These categories are:

(1) Students majoring in the department in question, and
(2) Students majoring in other departments but taking courses in the department in question.

These two sources of credit hour demand present problems in estimating future teaching loads. A given department must not only consider enrollment increases for its own majors but must also concern itself with the impact of enrollment increases in all departments of the university. This impact might be small for a highly specialized department such as Nuclear Engineering and very significant for a department such as English, Chemistry, or Mathematics.

A technique for estimating future teaching loads for individual departments that was developed makes use of what will be termed a "distribution matrix." This matrix describes the input-output characteristics of all the departments relative to student credit hours. This matrix is of course defined by the curriculum of the various departments which prescribes the various courses to be taken by majors of the departments.

The distribution matrix provides the answer to the question of how the student credit hours generated by the majors of a given department will be distributed to the various departments of an institution. A matrix will be required for each student level (freshman, sophomore, etc.) since the curriculum requirements are different at the various levels. However, once a distribution matrix is formed for each student level, then the projected enrollment data for each department (Form 13) may be utilized to predict future teaching loads for each department.

The distribution matrix for each level can be formed by considering the specified curriculum of all departments or if computerized student records exist, it can be formed by analysis of the actual registration pattern of all the students. This second technique may be more desirable since students do not always follow the specified curriculum pattern.

After the desired distribution matrices have been developed then the following step-by-step process can be followed to obtain teaching load estimates in terms of Student Credit Hours and Student Contact Hours.

(1) Utilize department enrollment estimates and average data on Student Credit Hours and Student Contact Hours generated per student to develop total numbers for each of these factors by student level.
(2) Distribute the Student Credit Hours and Student Contact Hours generated in each department to all other departments by use of the distribution matrices.
(3) Summarize the data for each department for each future year.

A computerized procedure can be developed to accomplish the above general steps in detail. Such a procedure was developed in the course of this research effort and it proved to be very effective in producing the desired estimates. Figure 3 illustrates the basic process and Figure 4 shows the output of the computer program for a single department.

FIGURE 3 • TEACHING LOAD PARAMETERS

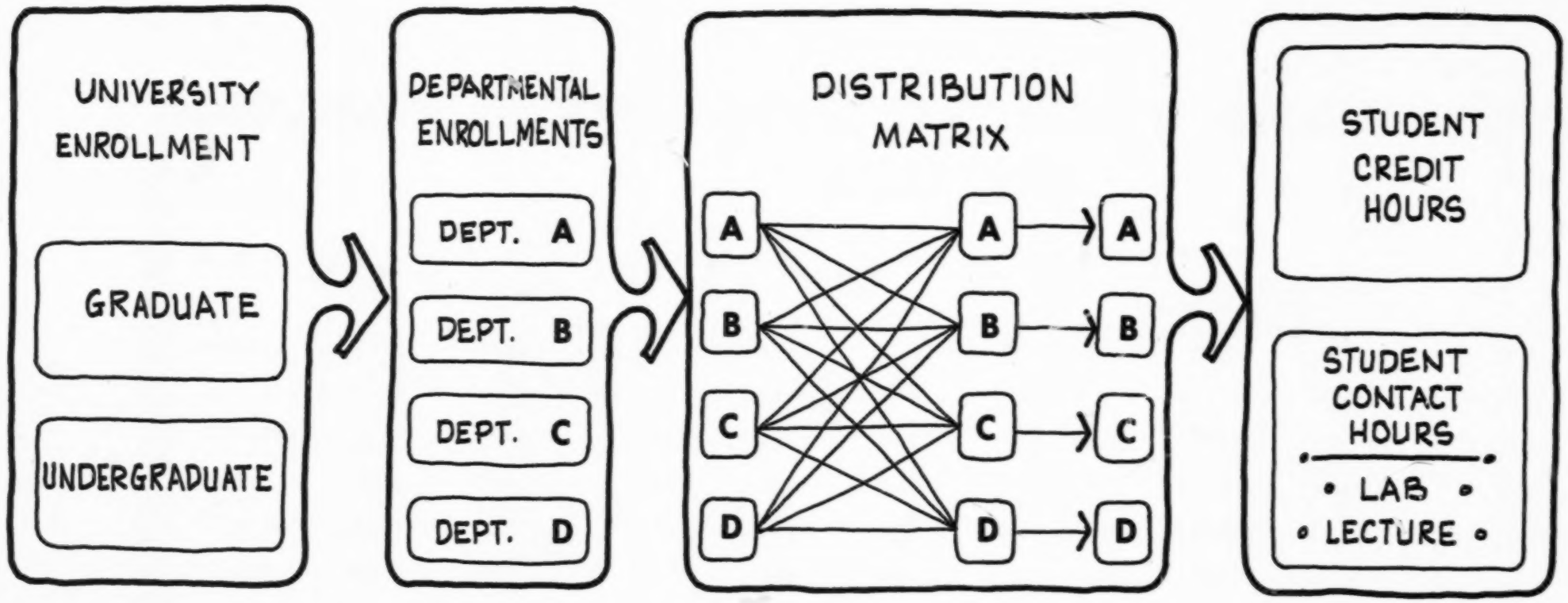


FIGURE 4 • TEACHING LOAD PROJECTIONS

TEACHING LOAD PROJECTION
BICLOGY DEPARTMENT

COURSE LEVEL	TOTAL ANNUAL STUDENT CREDIT HOURS 1968	1973	1978	STUDENT CONTACT HOURS FALL SEMESTER LECTURE 1968	1973	1978	LAB 1968	1973	1978
100	14878	21417	26541	4521	6512	8068	5998	8626	10711
200	1458	2191	2762	423	631	793	807	1203	1511
300	2093	3439	4268	736	1213	1504	625	1052	1299
400 AND 500	1089	1959	2487	368	664	840	325	580	752
600	1940	4152	5885	725	1581	2247	377	729	1018
TOTAL	21458	33158	41943	6773	10601	13452	8132	12190	15291

Research and Public Service Effort

The projection of future efforts in research and public service is a difficult task. There are no basic parameters such as enrollment and student credit hours which can be used to estimate future efforts. These efforts basically depend upon the ability to obtain funding which will vary with each department.

The best technique for estimating future efforts in research and public service seems to be one of projecting the number of Professional F.T.E.'s that will be employed in the future in the program. The Graduate Assistant, Support, and Hourly F.T.E.'s can then be generated in relation to the number of Professional F.T.E.'s projected.

Each department would need to evaluate its historical picture in terms of Professional F.T.E.'s and consider the future climate for supporting research and Public Service efforts. From this study a F.T.E. value for a base year could be established and projected into the future on some percentage increase basis. As previously indicated, the projected F.T.E. values for Professional staff could then be used to generate required support in terms of other staff.

REQUIREMENTS REPORT

The purpose of the requirements report is to develop estimates of the resources that will be required by the department to conduct the programs which have been projected. The basic resources or requirements are as follows:

(1) Faculty and Staff
(2) Space Requirements
(3) Funds

Forms 17-26 in the appendix provide for summarizing data on requirements.

Faculty and Staff - Faculty and staff requirements and basic fund requirements for future programs should be estimated in terms of teaching, research, and public service. These estimates could be made as follows:

Teaching - The number of Professional F.T.E.'s required should be related to the projected number of Student Credit Hours. This requires definition of teaching loads or student-teacher ratios. For example, consider that a Full Time Equivalent (1.0 F.T.E.) would be expected to carry a teaching load of nine (9) hours during the fall and spring semesters and six (6) hours during the summer. If the average class size was 30 students, then the following Student Credit Hour load that would be developed per F.T.E. is as follows:

Fall	30 x 9 =	270
Spring	30 x 9 =	270
Summer	30 x 6 =	180
TOTAL		720 Student Credit Hours

If the department was projecting a future Student Credit Hour load of 14,400 SCH per year then the F.T.E. requirements could be estimated as follows:

$$\frac{14,400}{720} = 20 \text{ F.T.E.'s}$$

The Student Credit Hour per F.T.E. ratio would vary by department and by undergraduate and graduate course level. The specific value for this ratio would depend upon the basic teaching load philosophy of each individual institution.

Once the F.T.E.'s for the professional category were established then the number of F.T.E.'s in the other categories could be developed as "spin-off" or support requirements. For example, five (5) Professional F.T.E.'s might generate the need for one clerical position.

Research and Public Service - The number of F.T.E.'s in the various categories for research and public service have been estimated on projection forms 15 and 16.

Budget Requirements - After developing estimates of the number of F.T.E.'s required in teaching, research, and public service for each of the four categories, these data are entered on Forms 17-20. An average annual salary for each category is then established and the budget requirements for Personal Services may be calculated.

Space Requirements - Space requirements would be estimated in the two categories of (1) Teaching Facilities (classrooms, laboratories), and (2) Non-teaching Facilities (offices, research labs, etc.). The techniques of making this space estimation are developed in Volume IV and will not be repeated here. The example report illustrates the summary data utilized to determine the space requirements entered on Forms 21 and 22. It can be seen that the number of contact hours is the basic planning parameter for teaching space and the number of F.T.E.'s is the basic generator of non-teaching space. These basic parameters are developed for each academic department as a part of the process of completing the planning report.

Funds - The final consideration in the requirements section is the annual operating funds required to produce the desired programs. These operating funds are divided into three basic categories which are discussed as follows:

Personal Services-Total salary funds required to support projected F.T.E.'s for all categories. (Forms 17-20)

Capital Expenditures-Funds required to purchase equipment, furniture, and other similar requirements. (Form 23)

Other Expenses-Funds required for travel, communications, services, and other operational expenses. (Form 24)

Form 25 provides a summary of the funds required in each category by each major program. Form 26 provides a total budget for three future years.

TOTAL REPORT

The material from the Historical, Projections, and Requirements sections should be combined with the sections on Organization, and Resource Inventory to provide a total departmental planning report. This report can go forward for review and modification at the college level. Once a given college has reviewed and approved all department planning reports, it is relatively easy to assemble a combined report (of all department plans) that provides a planning perspective for the college.

RESEARCH AND PUBLIC SERVICE

Special organizational units such as research institutes and public service units also may exist at a given institution. These type units are program implementation units and they should also complete planning reports at the same time they are being developed for the academic units.

The same basic format suggested for the academic departments can be utilized by the research and public service units. The forms on enrollment and teaching loads can, of course, be deleted. Depending upon the organization of the institution, it may be desirable to merge the planning reports of the research and public service units with the academic department reports to produce a total plan for each college.

PLANNING REPORT·
PROGRAM SUPPORT UNITS

While the academic departments and special research and public service institutes will conduct the basic programs in teaching, research, and extension, these organizational units are dependent upon a number of service organizations for support of their efforts. A partial listing of these organizations that serve the program units are as follows:

Registrar	Fiscal Office
Library	Information Office
Physical Plants	Student Services
Purchasing Office	Personnel Services
Auxiliary Services	Data Processing

Planning for these support organizations is dependent upon data relative to the programs of the various academic, research, and public service units. Thus, it is necessary to develop the planning reports for program implementation units prior to initiating planning work with the service organizations. Once the implementation planning reports are available excellent data on requirements for service can be furnished to the support organizations to be used as a basis for their planning.

FORMAT

As in the case of the planning reports for the program implementation units, a planning report for the support units is a basic element of the planning procedure. The format of the planning report for the program support units can be very similar to that proposed for the program implementation units. The basic consideration here is for the projection of personnel requirements which in turn can be utilized to determine space and fund requirements.

A separate set of forms for the program support units has not been illustrated in this volume since they would be very similar to the departmental planning report that has been presented. The forms (from the departmental planning report) on teaching, research, and public service could be deleted and the basic emphasis relative to the planning reports for the program support units would be to collect and summarize data on personnel, space and fund requirements. Special consideration should be given to the technique (discussed in the next section) for developing basic planning parameters for each support unit.

The various administrative offices such as College Deans, Vice-Presidents, etc., should also complete a planning report as a support organization. This would provide data on their needs for personnel, space, and funds as additional input to the total planning effort.

PLANNING PARAMETERS

In order to properly project the activities of the various support units from which to estimate future requirements, it is necessary to establish planning parameters which can be related to the growth being projected by the program implementation units. These parameters will in general be unique to the individual organizational units.

For example, if the organizational unit responsible for providing custodial services is to determine future staff requirements, then a basic planning parameter here would be the total square feet of building space that must be cleaned. It would be necessary in this case to utilize the planning reports from the other units and to arrive at a probable amount of floor space for future years. From these data it would be possible to generate the requirements for custodial staff, supervisory staff, space, and required funds.

The basic projection factor to be determined is the number of personnel required (in terms of F.T.E.'s) in each of the personnel categories. This estimate will in turn be dependent upon special parameters which reflect the work of a given organizational unit. The basic planning procedure for support organizations might be itemized as follows:

(1) Determine basic planning parameters for each unit.

(2) Analyze data projections from other units to determine the future value of basic parameters. (Example - floor space)

(3) Estimate future personnel requirements based upon the basic parameters.

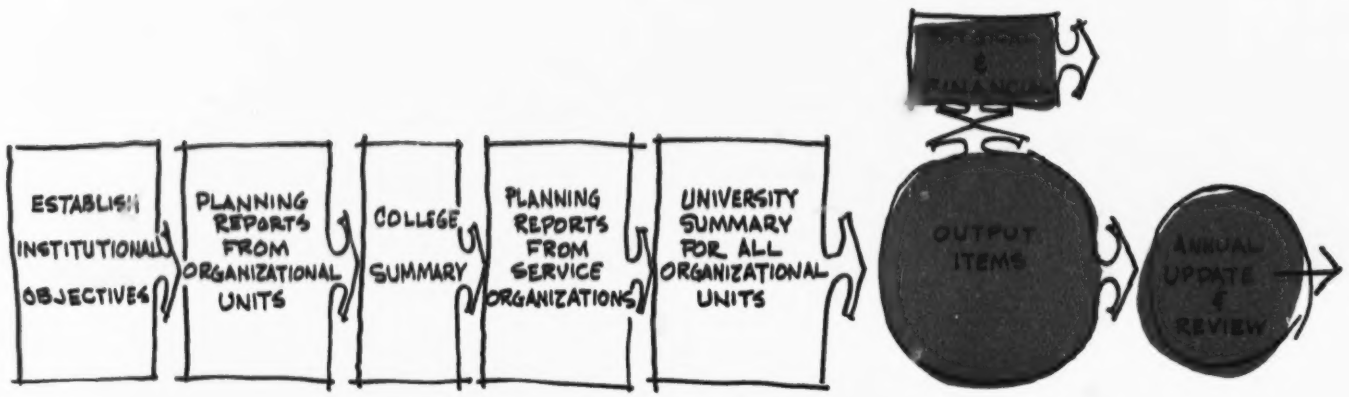
(4) Utilize future personal requirements to generate future requirements of space, equipment, and funds.

UNIVERSITY SUMMARY

After all organizational units have completed a planning report it is then necessary to summarize the data produced by these reports at the university level. Ideally the process would be initiated by completing planning reports from all of the program implementation units. These reports would then be reviewed and modified at the college level and made available as input to the planning of the service or program support organizations. The program support units would then complete individual planning reports reflecting their plans and requirements.

The summary of the planning reports for all of the organizational units of the university would then produce basic data which could be input to the Physical Plant and Financial Planning phases of the total planning process.

MANAGEMENT PLANNING PROCESS



It is now possible to summarize the total Management Planning Process that has been previously discussed. Figure 5 on the following page illustrates a graphical presentation of this total process. It is of particular importance to stress the feedback lines that are shown in this figure and to emphasize again the need to inform and involve the many organizational units that make up a university organization.

OUTPUT

It is proper to consider the product of the Management Planning Process at this point in order to fully evaluate its value to the total planning system. The major items of output are as follows:

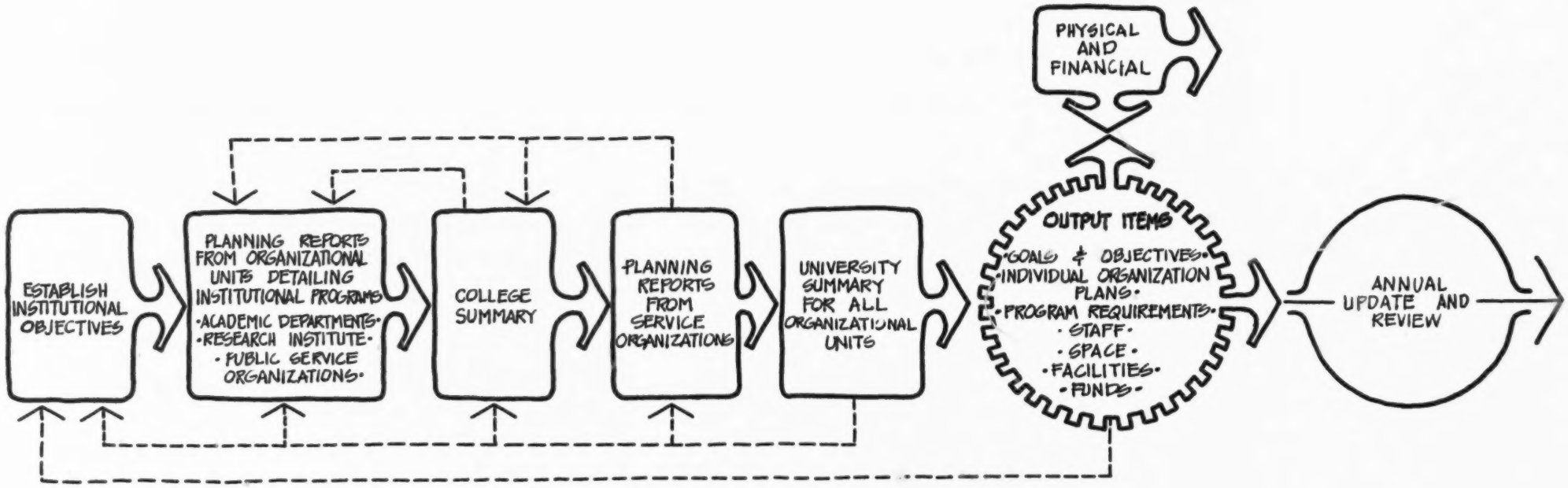
Objectives - The process should produce a specific set of objectives and clear definition of the role and scope of the institution. The availability of objectives will permit the "Management By Objective" approach in the administration of the university and will provide basic direction for all other phases of the planning effort.

Organizational Unit Planning - The process of developing the total management plan by first developing individual organizational unit plans and then by combining the results of these unit plans at the various administrative levels provides a very workable and desirable technique. It has the following advantages:

(1) Involves and informs a large segment of university personnel.
(2) Provides individual unit plans which can be implemented at the department and college levels and provides the opportunity to improve management at all levels.
(3) Permits a more thorough study than would be possible if conducted completely by a central planning staff.
(4) Utilizes the technology and experience of the administrators and personnel of the individual units and permits attention to specific problems of the individual unit.

Program Requirements - The organizational unit plans produce estimates of requirements (for both implementation and support units) in terms of staff, space, and funds. These data then provide vital input to the physical and financial planning phases.

FIGURE 5 · MANAGEMENT PLANNING PROCESS



PHYSICAL PLANT PLANNING

The management planning process should produce the necessary basic data required to develop a physical plant plan. These data are briefly summarized as follows:

Objectives - Statement of educational aims that would influence the concept and development of the physical plant.

Student Data - Projections and characteristics of the student body that will be required to plan housing, traffic controls, land use and other aspects of the physical plant.

Faculty-Staff Data - Projections and characteristics of the personnel of the university that are basic to housing and traffic studies.

Space Requirements - Projected space requirements (both teaching and non-teaching space) for each organizational unit. These data can be combined to formulate building programs at the college and university levels.

FINANCIAL PLANNING

The Management Planning Process also produces estimates of future annual operating costs and in combination with the Physical Plant Planning Process estimates of future capital costs. The organizational unit plans include estimates of future annual budget requirements which can be summarized at the college and university levels. The facilities requirements of the management plans would go to the Physical Plant Planning phase where they would be converted to specific buildings and other facilities for which a cost estimate is possible and from which future capital cost can be estimated.

ANNUAL UPDATE AND REVIEW

This is a vital phase of the Management Planning Process if the plans developed are to be responsive to the needs of a dynamic institution. For example it is known that universities will be teaching subjects five and ten years in the future that are not even known to exist today. Change will be the only constant in the future of education.

It is recommended that the organizational unit plans be reviewed and updated at least once each year. A general timetable for this procedure is shown in Figure 6 which emphasized the continuous nature of the total planning process. The format of the planning forms provide for adding an additional year of data (both historical and projected) each year. This permits the maintenance of a one, five, and ten year planning base and the year-by-year comparison of projected and actual data.

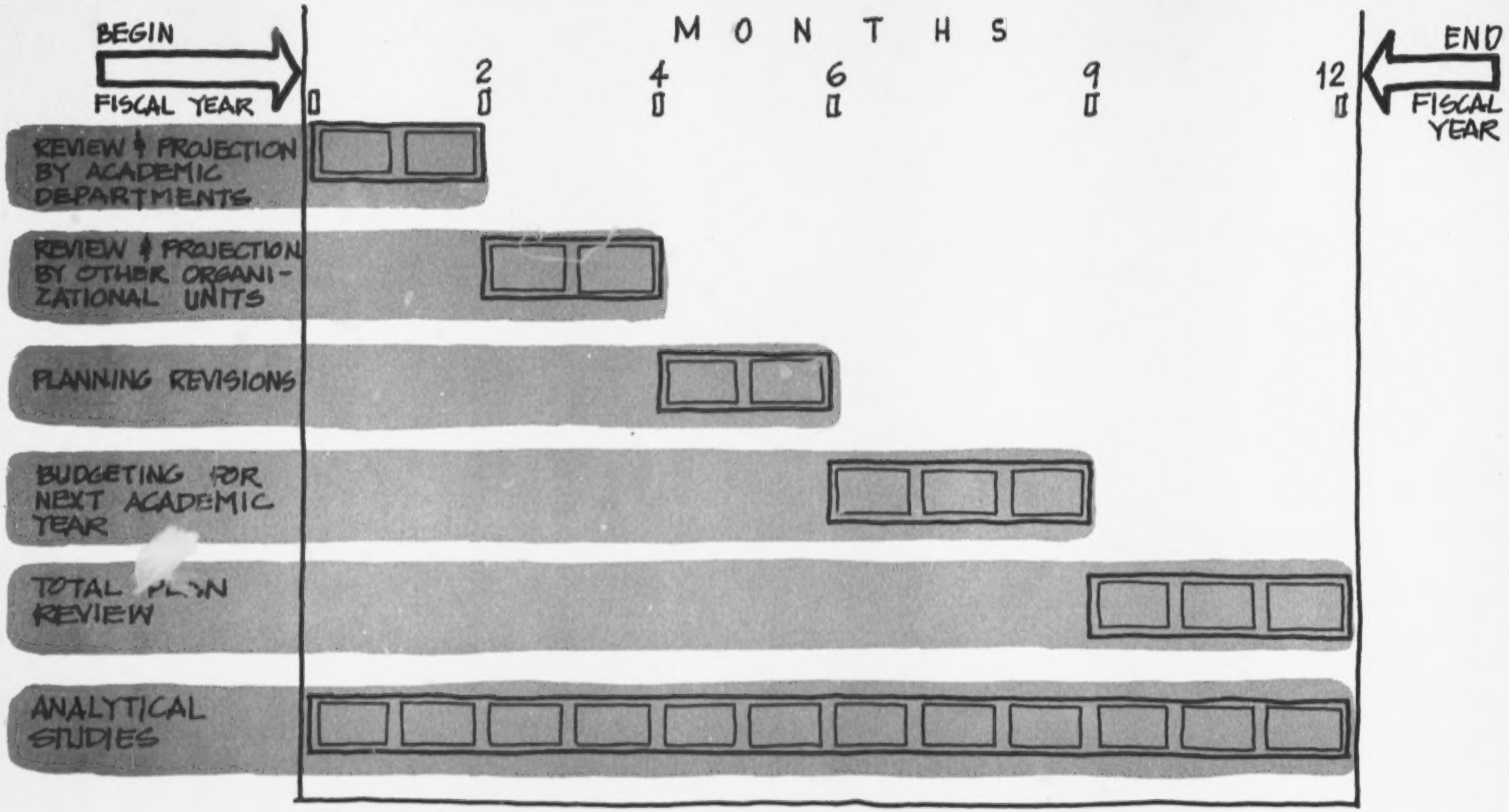
In this manner, required changes in objectives and unexpected changes in enrollments, research efforts, etc., can be recognized and the planning process modified accordingly.

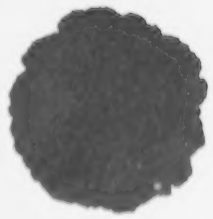
SUMMARY

Finally it should be emphasized that the planning process discussed here provides a basic framework for an effective management system. The data provided by the organizational unit plans is a basic information system for management at all administrative levels.

The commitment of a university to specific objectives provides basic guidance and direction to all facets of its administration. The annual review and evaluation of the progress of each unit toward planned objectives provides an excellent means of administrative control of the large and complex operation of a university.

FIGURE 6 • ANNUAL PLANNING ACTIVITIES





ORGANIZATION FOR PLANNING

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- Institutional Objectives
- Planning Reports–Organizational Units
- Management Planning Process

SECTION 2 — ORGANIZATION FOR PLANNING
- Basic Considerations
- Development and Staffing
- Planning Position
- Summary

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7 Organizational Chart – Planning Office 65

No matter how well a planning system may be designed, its ultimate success will depend upon the people who will administer the system and the framework of organization within which the system is implemented. Thus, the organization provided for the planning effort must be given very careful consideration. This section will seek to provide guidelines relative to organizing and staffing for the job of university planning.

The most effective planning can be achieved when responsibility for administration of the system is assigned to one executive who reports to the chief administrator of the institution. The support of this chief administrator is vital. Continuity can only be achieved if there is regular evaluation of progress and analysis of results in comparison with plans. Committees can be used effectively in the planning process particularly for communication and coordination. They provide an excellent source of collective judgment but planning must ultimately be related to individual responsibility and action.

Industry has made many significant advances in the area of planning. Those organizations that emphasize long-range planning are consistently recognized as leaders in their field. Traditionally the chief executive of an industrial organization is responsible for long-range planning. The subordinate organization concentrates upon day-to-day operations and short-range planning. The chief executive formulates goals for the organization to achieve and the ability to express these goals in meaningful terms is a key factor in the success of the planning effort. Quantification of goals ensures that they can be understood and permits the use of mathematical techniques and operations research. Effective planning in industry ultimately involves everyone in the management organization.

Industry and educational institutions face many of the same problems in planning. The need for extensive participation in the planning process must be balanced with the need for coordination of effort. The effectiveness of the planning process is often related to the interest and support given to it by the chief executive. There are many demands upon his time both in industry and in educational institutions. In all but the smallest of organizations, he must delegate responsibility for planning and rely upon his staff for assistance. There must be a formal system for planning and responsibility for its administration must be assigned. Everyone who is assigned management responsibility should plan for his assigned functions.

BASIC CONSIDERATIONS

In discussing organization and the master planning process, it is important to emphasize the distinction between planning as a management function and planning as a system. As a function, planning is inherent in every plan of management organization. When speaking of planning specifically in terms of the master planning system, the planning organization refers to those individuals who perform activities directly related to the administration of the system. In a small institution this might be one individual. In a larger institution the planning organization may be a group of highly trained specialists.

The plan of organization of an academic institution should provide for planning as a management function and also include the administration of the master planning system. The planning organization must be adapted to the administrative and management framework of the particular institution. It should be based on flexible principles and premises which permit growth with the institution and responsiveness to changing needs. The following premises are not intended to confine or restrict the organization in support of master planning. They define the relationships and requirements within which the master planning organization must operate to be effective.

INTEGRATION OF MASTER PLANNING INTO THE MANAGEMENT PROCESS

Good management begins with planning and planning is a vital and inseparable function of management. Master planning is the process of consolidation of a total plan for the institution. It includes all programs, activities, and operations which are necessary for achievement of established goals and objectives. The master planning system is an orderly process for formulating present decisions with the best possible knowledge of their future results and it serves to define the organization of effort necessary to execute the decisions. It incorporates the development and reporting of information needed to monitor progress and measure results in a way that facilitates further planning.

To implement this system, the planning organization must maintain an effective working relationship with all functional areas and divisions of the institution. It neither duplicates nor assumes responsibility for activities performed elsewhere in the institutional. The master planning system and organization contribute to the effectiveness of the management process and their operation must be consistent with good management practices and principles.

PLANNING AT ALL LEVELS OF THE MANAGEMENT ORGANIZATION

Responsibility for management includes responsibility for planning. Effective planning can be accomplished only if all members of the management organization who are responsible for action participate in the planning process. The master planning system requires planning at every level of management. The objective of the planning organization is to coordinate and facilitate this process.

It must function through established channels of communication and management responsibility. The planning organization provides assistance and support for the planning that must be performed at all levels and areas of management, but the basic planning must be performed within the area or unit that is responsible for the activity.

Each level of management has a vital and necessary role in the master planning system. Top management is concerned primarily with general policies, objectives, and long-range plans. Detail planning will begin within each organizational unit and will be reviewed at each successively higher level of management for consolidation into the total institutional plan. Priorities for programs and activities can be established through this same process and any necessary reconciliation or revision of conflicting or inconsistent plans can be effected through the same organizational pattern.

THE PRESIDENT AS CHIEF PLANNING OFFICER FOR THE INSTITUTION

The chief executive or administrative officer is responsible for the overall management of the institution and this responsibility must include the planning function. The President is responsible to the governing board of the institution for attainment of established objectives and for compliance with approved policies. The planning process must be directed toward these objectives and the necessary direction can be exercised only by the President. The master planning system will support the President and will aid in the development, clarification, and interpretation of objectives. The planning organization must function through the office of the President and assist him in directing and coordinating all planning efforts and merging them into an integrated plan of action. This plan of action will be a source of management information for both day-to-day and long-range operations of the institution.

Direction of the planning process by the chief executive officer will provide many important advantages including:

- Top level perspective of the total operation of the institution;
- Independence from the influence of any single function of the institution;
- Top level support for the planning process; and
- A focal point for presentation of management information for top level management decisions.

RESPONSIBILITY FOR ADMINSITRATION OF THE MASTER PLANNING SYSTEM

The function of the President of an academic institution is so demanding and time consuming that it is unlikely that he can devote the necessary attention to the details of administration of a planning system. Responsibility for this administration and coordination must be delegated in all but the smallest of institutions. This responsibility must be a continuing assignment and will warrant the attention of an administrator who is well-trained in modern planning techniques. It is essential that an individual be responsible for this administration. To appoint a committee for this function would be inefficient and would endanger the continuity which is essential. The committee process is effective for purposes of communication and coordination and it is desirable when collective judgment is required. A planning committee may be established to advise and assist the administrator of the master planning system but he should be directly responsible to the President.

The title of the individual who will head the planning organization will vary depending upon the size and policies of the institution. In a large university the skill and experience required to effectively fulfill this responsibility and the organization status necessary for the function will justify the title of Vice-President. At a smaller institution the title of Director of Planning may be more appropriate. In certain institutions in which only normal growth is expected and in which expansion plans will not justify the full-time attention of an executive, responsibility for administration of the master planning system may be assigned to an Administrative Assistent to the President.

The Support Function of the planning organization is to support and facilitate the planning process throughout the institution. They must operate as a staff function of the office of the President and maintain a service relationship with all other functions of the institution. They have no direct authority over the planning process except in terms of administration of the master planning system. The master plan must be a product of the entire management organization. The planning organization can provide data for planning and can advise and assist the other functions in developing specific plans. Through the service they offer, the planning organization must win respect and gain cooperation. The President can exercise authority when the administration of the master planning system requires this, but the planning process must reflect independent thinking and be the actual product of those who are responsible for management.

MASTER PLANNING AND THE ANALYSIS FUNCTION

Planning is a continuous process and must include the periodic evaluation of progress and restructuring of plans to meet new conditions. This process must include analysis. Analysis of previous experience and historical data is necessary in the development of plans. Potential areas for improvement are identified through analysis. The determination of the financial and personnel

requirements of projected programs and plans is an analysis function. Everyone who participates in the planning process is involved in analysis. The planning organization should be capable of providing assistance with this function and should include the technical skills required by specialized problem areas. The planning organization should also be concerned with analysis of problems related to the overall institution or master plan. Special studies that would logically be assigned to the planning organization include space utilization, cost analyses, and manning or staffing requirements. Operations research techniques would be useful in many of the studies conducted by the planning staff.

MASTER PLANNING AND MANAGEMENT INFORMATION

Master planning utilizes the same information which is required for good management and control of operations. To avoid duplication in the development of information systems there must be very close coordination between the master planning system and the management information program. Any institution that does not have a well developed management information program will find that the introduction of a master planning system is an excellent basis for the development of a complete program to provide management control data. The planning organization must have the capability to develop systems and procedures which can be expanded as the need for management information grows. The use of a computer increases the speed and capacity of the information system and planning personnel must be familiar with computer technology. The planning organization staff should include systems-analysts and computer programmers either on a part-time or full-time basis depending upon the needs of the institution.

MASTER PLANNING AND PHYSICAL FACILITIES

Development and maintenance of a campus plan is a major objective of the master planning system. This will necessitate that the planning organization maintain liaison with architects and planning consultants when their services are needed. Coordination of new construction and major remodeling projects is essential for maintenance of the campus plan and should be assigned as a responsibility of the planning staff. Also related to this objective is coordination of space assignment, development and maintenance of indices for evaluation of space utilization, and assignment of building priorities. The planning staff must maintain data regarding construction costs, maintenance costs, alternate construction techniques, and sources of financing for new construction.

MASTER PLANNING AND FINANCIAL MANAGEMENT

Many of the programs of an institution are necessarily restricted by the financial resources that are available and financial planning and budgeting are often considered only as the limitations within which the institution must operate. Financial planning is essential for good financial management and it is also concerned with the effective use of resources.

Management of financial resources and fiscal control is a function of the business affairs or treasury division of the institution. Master planning will involve determination of the financial requirements projected by new plans and projections of future income.

Close coordination between the financial management and master planning functions is essential. The planning organization is primarily concerned with coordination of financial planning in the master plan while the financial management organization will be responsible for carrying out the financial plans. When new techniques must be developed, a cooperative effort between the two

staffs will be effective. This would include development of income and cost models and introduction of Planning-Programming-Budgeting System techniques. Budget preparation and analysis is a function that is important to both the planning and financial management organizations and responsibility can be assigned to either staff. The planning staff will be more concerned with the initial development and consolidation of the operating budget and the analysis of budget performance. The preparation of budget performance reports is related to accounting procedures and will be of greater concern to the financial management staff who are interested in budgets from a control point of view. The planning organization should have an active role in the development of the capital expenditures budget.

DEVELOPMENT AND STAFFING

The premises upon which a planning organization should be based have been discussed in the preceding section. The application of these premises will vary between institutions and will be influenced by several factors. These factors include:

(1) Present status of planning in the institution,
(2) Present size and scope of the institution,
(3) Growth objectives,
(4) Present organization structure,
(5) Existing management systems.

To develop an effective planning organization for the implementation and administration of a master planning system, an institution should thoroughly study these factors.

PRESENT STATUS OF PLANNING IN THE INSTITUTION

Although an institution may have had no formal program for master planning, it is probable that there has been planning in at least some areas of operation. The extent of this planning and the methods that have been used will be major factors in determining the planning staff necessary to implement and administer a master planning system. A study of the present status of planning in the institution should be the first step in the development of the planning organization. This study will indicate the amount of effort that will be required to introduce the new system. This may range from training in basic planning techniques to consolidation of existing methods into one system. A preliminary study will also help determine the types of skills which must be included in the planning organization. Areas in which there has been little planning or in which difficulties have been encountered, may require special skills.

PRESENT SIZE AND SCOPE OF THE INSTITUTION

The present size of an institution often influences or determines the amount of time the chief executive officer may devote to any single function. As size increases, the President must delegate more responsibility and authority to subordinates. In a very small organization, the President may be able to coordinate and direct the planning system through an administrative assistant. In a larger institution, the President may find it necessary to delegate responsibility for this coordination and administration to a Director of Planning. In a large university the appointment of a Vice-President of Planning will be warranted.

The staffing requirements of the planning organization will be related to the scope and complexity of the operations and programs of the institution. Greater effort is necessary to coordinate the planning functions in an institution with diverse operations. Research programs, extension or special educational programs, and multi-campus operations impose special problems in planning and may require the development of unique or individualized planning models and techniques. Larger institutions that offer graduate programs may find an advantage in having capable graduate students available for part-time employment by the planning staff. Special studies may be conducted for the planning organization as research projects by departments or divisions of the institution.

The planning system that has been defined requires a rather wide range of specialized talent. The work of a desired planning staff should be conceived as a team effort with several disciplines represented on the team. The more pertinent of these required disciplines are as follows:

Management Science	Architecture
Systems Analysis	Engineering
Economics	Computer Science

Only the larger institutions could be expected to assemble a planning staff with the capabilities previously described. Smaller institutions should also utilize the same type of talent by employing consultants to provide the specialized talents required to develop various aspects of the planning process. The role of a consultant should be a supporting role however with an institutional planning office assuming the overall responsibility to develop and maintain a total planning effort.

GROWTH OBJECTIVES

In the development of a planning organization, it is necessary to consider both the nature of the growth or expansion that is expected and the rate at which it will most likely occur. The future scope of the institution must be projected as well as the total size or enrollment. Diversification or addition of programs will impose different requirements for the planning staff than will modification or improvement of existing programs. The priority of functions within the planning organization should be based on the objectives of the institution. When the objectives emphasize growth and expansion, the planning staff will be concerned more with planning functions. Analysis functions will be more important to institutions that expect only normal growth but stress improvement of quality of operations. This emphasis will tend to change within an institution and ultimately a balance between the functions may be achieved.

The size of the planning staff should be consistent with the growth objectives of the institution. An institution that projects unusual growth will probably require a larger planning staff than its percent size would indicate. The rate of growth will determine the amount of time available for preparation and will present problems in facilities planning. Changes in the scope of the programs will require expended management information and new control techniques.

PRESENT ORGANIZATIONAL STRUCTURE

The present organizational structure of an institution will influence the approach that should be used in installing a master planning system. The planning organization must adopt approaches that are consistent with the present management structure. Existing channels of communication and responsibility must be respected. The master planning system may lead to changes in the management

structure which will improve control of operations but the system must be installed within the existing framework. The present plan of organization should be reviewed in terms of definition of responsibility, decision-making authority, communications channels, and the qualifications of present personnel. These factors will determine how the planning organization can be established, how it must operate, and what it must do to be effective.

In developing the planning organization it will be desirable to utilize present personnel who are familiar with the organization. Personnel selected for the planning staff must have the training and experience required to contribute to the development and administration of the master planning system. If personnel from within the institution can be assigned to the planning staff, greater acceptance and support can be expected for their efforts. In reviewing the present organizational structure, the qualifications of personnel should be studied for the possibility of such assignment to the planning staff. The qualifications of present personnel will also determine the need for the support services that should be provided by the planning organization. This will indicate the amount of time that must be devoted to training existing personnel in planning techniques so that they can participate effectively in the master planning system.

The installation of the master planning system will be facilitated by the existence of a clear and thorough definition of responsibility and authority within the institution. The master planning system requires the participation of each member of the management organization within the context of his responsibility. Unless the extent of responsibility and authority is well understood, it will be difficult to implement the system. Master planning provides a basis for the formulation of decisions which must be made within the management organization. Unless these decisions are made, the master planning system can have only limited success.

EXISTING MANAGEMENT SYSTEMS

A master planning system will be a vital part of the overall management process of an institution and the existing management system will affect the effort that is needed to develop and introduce the master planning system. The presence of such techniques as effective financial budgeting, cost accounting, work measurement, analytical studies, and space utilization controls will mean that data essential for planning is already available and will indicate that the organization is familiar with scientific management. Less preliminary development will be required to introduce the master planning system and a smaller planning staff will be necessary if the institution has an effective management information system. It may not be necessary to supplement the management organization with additional skills in the planning staff and it will be easier to establish and maintain the working relationships that are needed for the administration of the master planning system.

A master planning system will require efficient processing of information and the existence of an effective data processing organization will be a valuable asset to the planning staff. A computer will provide the speed of processing that is needed but will require programming skills for the development of the master planning system. The presence of a mechanized system will probably mean an added advantage in that data may be available in a useful form.

PLANNING POSITION

After a review of the previous factors, an executive should be selected to administer the system and direct the planning organization. The appropriate title and organizational status of the position should be determined and the responsibilities that are to be assigned should be defined. The following sample position description can be altered to meet the requirements of the particular institution. This position description also suggests the desirable qualifications for candidates for the position.

SAMPLE POSITION DESCRIPTION

TITLE: VICE-PRESIDENT FOR PLANNING

ALTERNATE TITLES:
- DIRECTOR OF PLANNING
- ADMINISTRATIVE ASSISTANT TO THE PRESIDENT

RESPONSIBLE TO: PRESIDENT (Chief Executive Officer of the Institution)

GENERAL FUNCTION:

To develop and administer the master planning system for the institution. Coordinate the planning and analysis functions necessary for the development and maintenance of the master planning system. Develop planning data and information and advise any unit of the organization requesting help in planning.

SPECIFIC RESPONSIBILITIES:

1. Administer the master planning system and provide liaison between divisions of the organization to coordinate the planning process. Reconcile any areas in which planning is not consistent.
2. Consolidate and formalize the master plan and maintain the plan in a current manner.
3. Assist in the development of projections for all operations and activities of the institution. Provide and interpret historical data and other information which will aid in the preparation of projections.
4. Keep abreast of the approved objectives and policies of the institution and coordinate with the President when any question of interpretation developes.
5. Develop and administer systems for providing planning, analysis, and management control information.
6. Establish methods for determining and analyzing the costs of planned programs and activities.
7. Interpret the master plan in terms of financial, space, and personnel requirements.
8. Participate in the investigation and development of methods for financing future programs and building plans.
9. Review space utilization in accordance with approved plans. Develop temporary solutions for space problems.
10. Coordinate new construction and major remodeling on the campus in accordance with the approved master plan.
11. Maintain liaison with architects, engineers, and planning consultants.
12. Develop and administer methods for studying and controlling faculty, staff, and administrative personnel requirements.
13. Review all projects and programs for conformity with the approved master plan.

14. Assist in the development of future capital expenditure budgets.
15. Maintain liaison with governmental agencies regarding available funds and new programs.
16. Conduct or direct research or special studies to investigate and develop alternate programs or methods which will achieve the objectives of the institution.
17. Participate in public relations programs to gain public appreciation and approval of the plans of the institution.
18. Coordinate the use and programming of computers to process planning data.

DESIRABLE QUALIFICATIONS:

1. Knowledge of planning techniques acquired through education and experience in the use of modern scientific management.
2. Knowledge of the organization and management of academic institutions.
3. Ability to communicate effectively and work with other people in a staff or service capacity.
4. Understanding of the financial management and economics of the operation of an educational institution.
5. Working knowledge of architecture and construction methods and costs.
6. Ability to develop systems and procedures for the accumulation, processing, and analysis of management control information.
7. Understanding of work measurement and simplification techniques and methods improvement programs.
8. Familiarity with the application of computer technology and programming for management systems.

The executive assigned to this position should prepare a plan to guide the development and implementation of the master planning system. This plan should include target dates and priorities for the functions of the planning staff and the planning staff should be manned in accordance with this schedule.

SUMMARY

The basic considerations and factors relative to the development and staffing of an organization for planning in universities can be concluded with the suggested organization chart shown in Figure 7. The basic conclusions relative to the organization for planning are as follows:

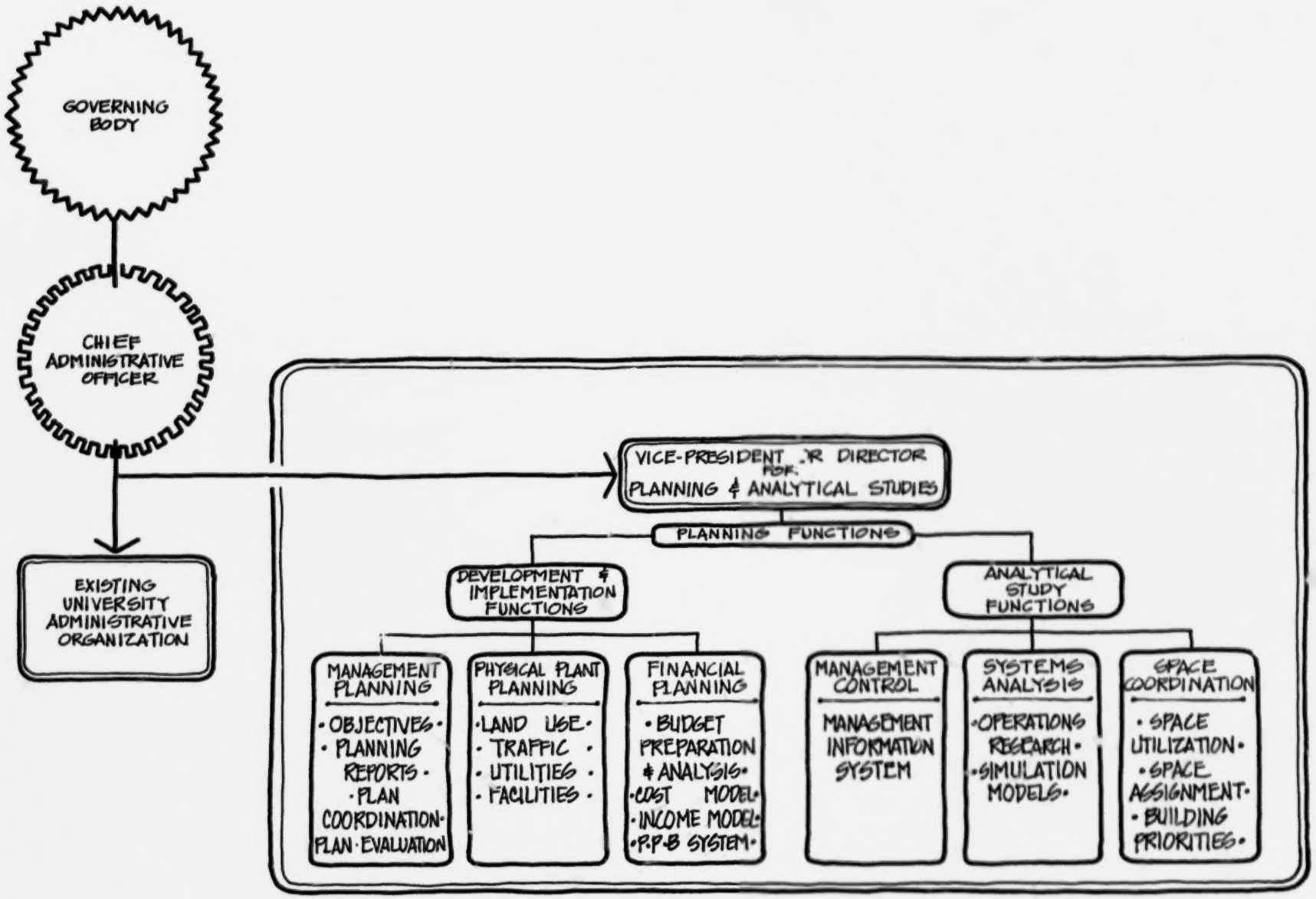
(1) The position of Vice-President (or Director) for planning and analytical studies should become a vital element of the organizational framework of an institution. The person holding this position would report directly to the chief executive officer of an institution and would assume the responsibility for the total planning and analytical studies effort.

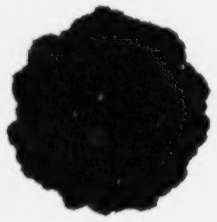
(2) The development function of the planning office should include the responsibility for developing an initial master plan for the institution if none existed or revising and updating any existing master plan.

(3) The implementation function of the planning office should include the responsibility of annually updating the plan by directing and coordinating review and evaluation efforts in the areas of management, physical, and financial planning.

(4) The analytical study function of the planning office should include the responsibility for conducting those analytical studies necessary to the provision of desired management information and to the implementation of scientific techniques of management.

FIGURE 7 · ORGANIZATIONAL CHART · PLANNING OFFICE





FINANCIAL PLANNING

SECTION 1 — MANAGEMENT AND PROGRAM PLANNING
- Institutional Objectives
- Planning Reports-Organizational Units
- Management Planning Process

SECTION 2 — ORGANIZATION FOR PLANNING
- Basic Considerations
- Development and Staffing
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- Cost Model
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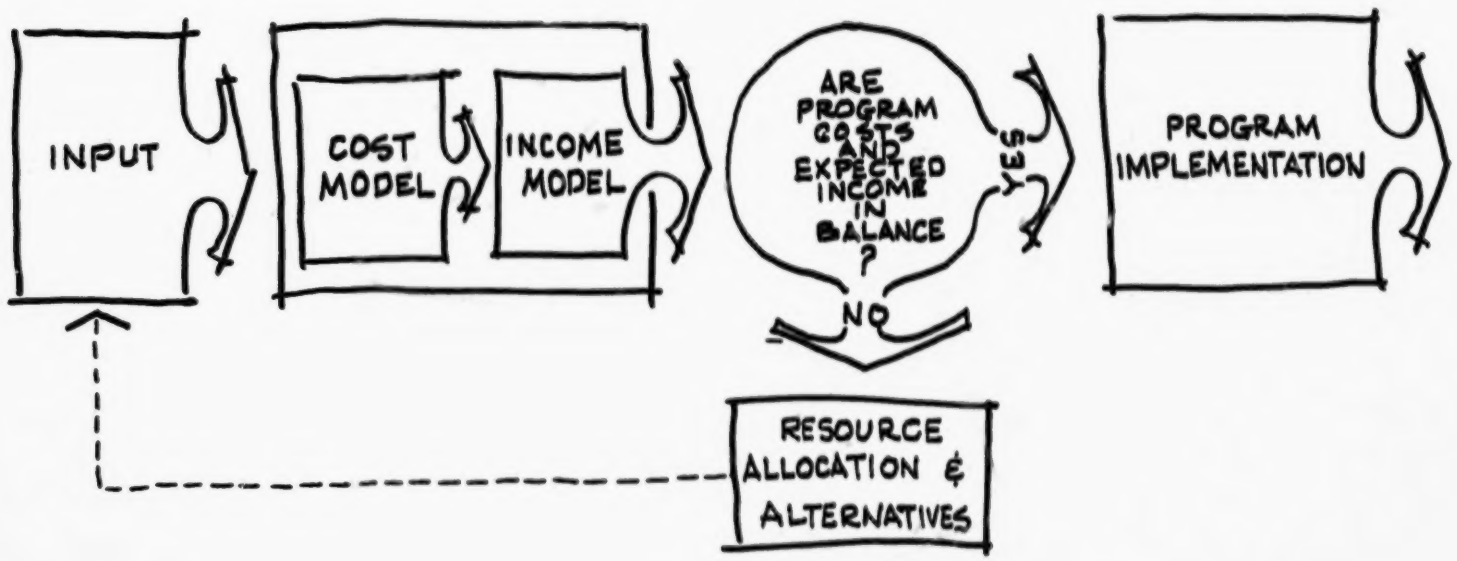
INTRODUCTION



It was stated in Volume I of this series that the budgeting process lends final shape and reality to all planning efforts that have gone before. No matter how thorough, imaginative, or desirable a plan may be, it is of little value if it cannot be implemented. Thus it is imperative that the planning process include a serious financial phase which will determine if the plans proposed are financially feasible. This section will discuss some basic guidelines that can be utilized in establishing a satisfactory financial planning process.

CONSIDERATIONS

First it will be desirable to establish the basic elements of financial planning and their relationship to the total planning process. Stated simply, the objective of the financial planning process is to provide answers to three basic questions which are listed as follows:

(1) How much will the proposed programs cost?

(2) How much income will be available from which to finance the programs?

(3) If projected costs exceed projected income, what can be done to obtain a balance between cost and income that will permit the realization of university objectives to the maximum extent possible.

The provision of answers to the above questions define the need for a (1) Cost Model, (2) Income Model and (3) Analytical Procedure of Resource Allocation. Each of these factors will be discussed in following sections.

ANALYTICAL FRAMEWORK

An analytical approach to financial planning for universities requires a new framework with which one can consider the pertinent aspects of financing higher education. Dr. John D. Millett, Chancellor, Ohio Board of Regents, has recognized this need and has suggested the framework shown in Figure 8.

Dr. Millett further states,

> "For 40 years the business officers of American higher education have insisted upon reporting the financial transactions of colleges and universities under three major headings: educational and general, auxiliary enterprises, and student aid. Yet, university presidents continue to make numerous public speeches and other public statements in which they describe the mission of their institutions as threefold: instruction, research, and public service. I believe it is time to recognize realities and adopt a five-fold basic classification of activities in our financial reporting and analysis as shown in the accompanying chart."[1] (see Figure 8.)

The analytical framework suggested by Dr. Millett is very effective for the financial analyses that will be proposed in this report. This framework will be utilized as a point of departure for developing suggested financial planning guidelines.

The framework suggests five major activities (or programs) that define the role and scope of university endeavors. In the management planning section of this volume the programs of Instruction, Research, and Public Service were defined as the major output programs of the university. The activities of Auxiliary Service, Student Aid, and General Administration were listed as support or service programs.

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[1] Dr. John D. Millett, "Financing Higher Education," *College and University Business*, Volume 44, (February, 1968), page 44.

FIGURE 8 • ANALYTICAL FRAMEWORK FOR FINANCING HIGHER EDUCATION

Activities	Sources of Income	Application of Funds	Types of Institutions	Sponsorship of Institutions
1. Instruction	1. Charges	1. Current Account	1. Universities	1. Private a. Nonsectarian b. Church-Related
2. Research	2. Government a. Federal b. State c. Local	2. Capital Account	2. Colleges	2. Public a. Federal b. State c. Local
3. Public Service	3. Philanthropy a. Endowment b. Gifts		3. Professional Schools	
4. Auxiliary Service			4. Community Colleges	
5. Student Aid				

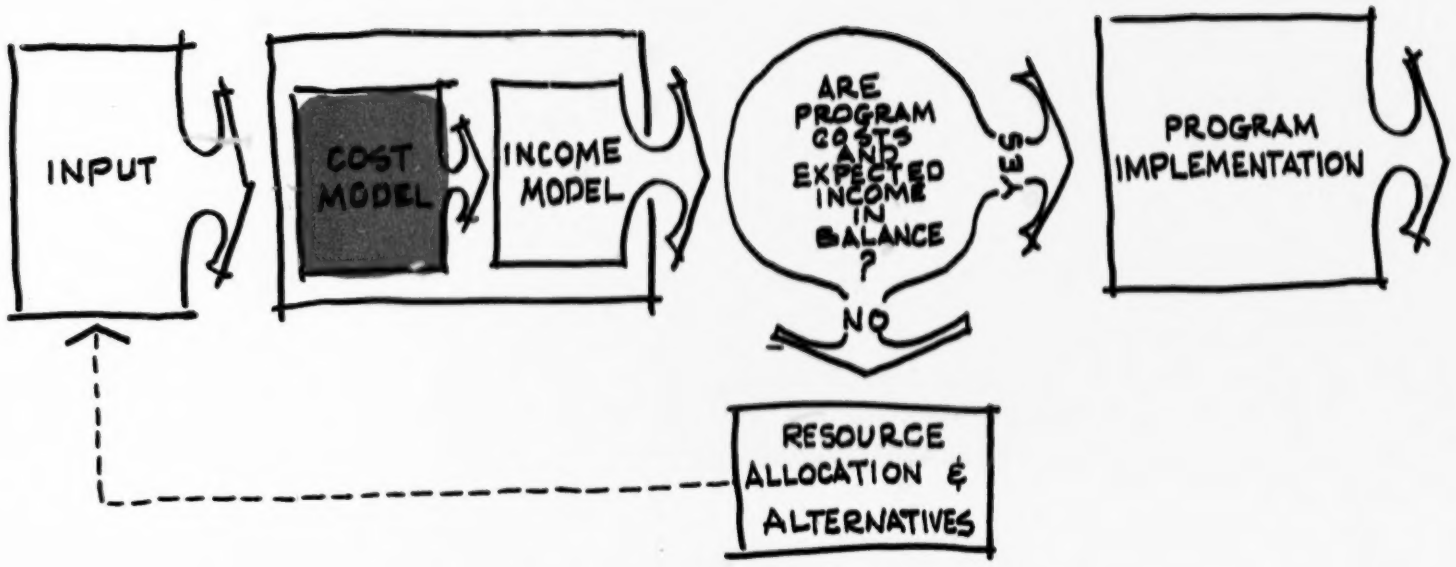
Source: John D. Millett
COLLEGE and UNIVERSITY
BUSINESS February 1968

For the purpose of this discussion, the activities or programs of the university will be considered as follows:

(1) Instruction
(2) Research
(3) Public Service
(4) Support Programs

It is, of course, possible and desirable to further subdivide the support programs (as suggested by Dr. Millett) for analytical studies of costs and income. In fact the management planning process developed previously would provide data on an organizational unit basis which would provide a further breakdown of such activities as Auxiliary Service and Student Aid.

COST MODEL


INPUT
COST MODEL
INCOME MODEL
ARE PROGRAM COSTS AND EXPECTED INCOME IN BALANCE ?
YES
NO
PROGRAM IMPLEMENTATION
RESOURCE ALLOCATION & ALTERNATIVES

A good technique for estimating program costs is vital to a realistic planning process. As outlined by the financial framework previously discussed, the costs of a university can be described in two basic categories which are:

(1) Current Account (or Operating Costs), and
(2) Capital Account (or Funds for Capital Expenditures).

A good model for estimating future costs in both of these categories must be developed.

OPERATING COSTS

The operating costs of a university are determined on an annual basis and can be generally described within the following items:

(1) Personal Services - Salaries of personnel.
(2) Capital Expenditures - Funds to purchase equipment, furniture, and other similar items for the various organizational units.
(3) Other Expenses - Travel funds, special services, office supplies, and other miscellaneous operating costs.

The planning reports for the organizational units as described in the first section of this volume are designed to produce estimates of annual operating costs in terms of the personal services, capital expenditures, and other expenses. When the anticipated budget costs for all of the organizational units of a university are combined, then a total annual operating cost for the university is developed. Thus, the planning procedure previously described provides an excellent means of estimating the annual operating costs of a university.

CAPITAL ACCOUNT

Funds in this account may provide for any of the following items:

(1) Construction of New Buildings
(2) Construction of Utility Systems
(3) Construction of Traffic Facilities
(4) Alterations to Existing Buildings
(5) Provision of Major Equipment

The costs of the above items can also be generated in the planning process. The management phase of the planning system should specify the physical requirements necessary to the programs to be developed. The physical plant planning phase should convert these requirements into physical elements such as new buildings, remodeling programs, utility systems, traffic facilities, etc. A thorough cost estimating effort will then produce factual financial needs for the capital account.

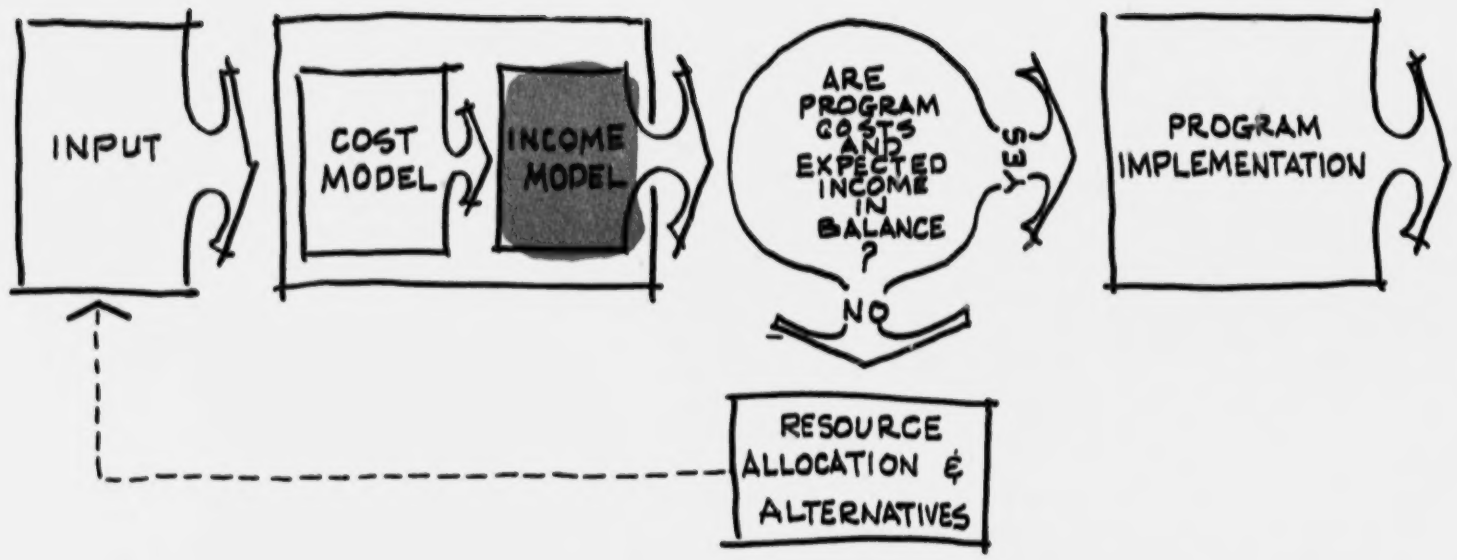
The emphasis in this phase of the cost model must be upon developing a complete and thorough estimate of all requirements for capital account funds for planning periods five and ten years in the future. This estimate should include consideration of assumed rising costs during the projection periods.

MULTI-YEAR BUDGETS

The estimation of costs should be for periods one (1), five (5), and ten (10) years in the future. In the case of capital costs, it would be necessary to develop a ten (10) year program of capital expenditures with a schedule or time table for the actual expenditure of funds. This would permit the inclusion of interest and other costs for financing the capital improvement programs into the total capital costs.

The consideration of five (5) and ten (10) year planning periods also permits the evaluation of the growth in total program costs. Such items as administration, utilities, maintenance, etc., may not appear to have significant costs in a one or two year projection but may be critical in a five or ten year cost projection where considerable growth in staff and facilities is required.

INCOME MODEL



A second requirement of the financial planning phase is a good technique for estimating future income. As established in the financial framework discussed previously, the basic sources of income for a university are as follows:

(1) Charges

(2) Government Funding
  (a) Federal
  (b) State
  (c) Local

(3) Philanthropy
  (a) Gifts
  (b) Endowment

Procedures for estimating the amount of future income produced by each of these sources should be developed.

CHARGES

The number and type of charges will of course vary by university but some of the most substantial charges are listed as follows:

(1) Student Tuition and Fees

(2) Overhead Charges on Sponsored Research

(3) Charges for Public Service Activities

(4) Charges for Auxiliary Services

(5) Charges for Student Programs

All types of charges must be identified and techniques for estimating the future income which they will develop must be established. For example, future income from tuition and fees can be related to future enrollments while overhead charges on sponsored research could be estimated by considering probable future funding levels of the research program.

It is also necessary to establish the restrictions which may be placed on income from charges. This money may go into the Operating Account, Capital Account, or both and some funds will be specifically earmarked within each of these major accounts. Thus, it is necessary to determine the amount of income from charges and the specific cost items to which it may be applied.

GOVERNMENT FUNDING

The amount of income from government funding will be greatly dependent upon the Sponsorship of the Institution (Public or Private). The basic fund sources in this category are briefly discussed as follows:

Federal - Major funds from this source are for construction programs, sponsored research, and public service activities. The estimation of the amount of future income from this source is very difficult. However, estimates based on past performance and anticipated trends must be made in order to account for this significant source of income.

State - This income is also greatly dependent upon the Sponsorship of the Institution. For state supported public schools it represents the major source of their funds while for private schools it is probably insignificant.

Again it is necessary to develop means for estimating income from this source and to determine the application (capital or operating) of the funds. Many states have a formula basis for funding state institutions which would facilitate this estimation.

Local - This source is usually not significant for large colleges and universities but may be a major source for community colleges. Studies of the present and future potential for financial support by the local area must be conducted in order to develop estimates of income.

PHILANTHROPY

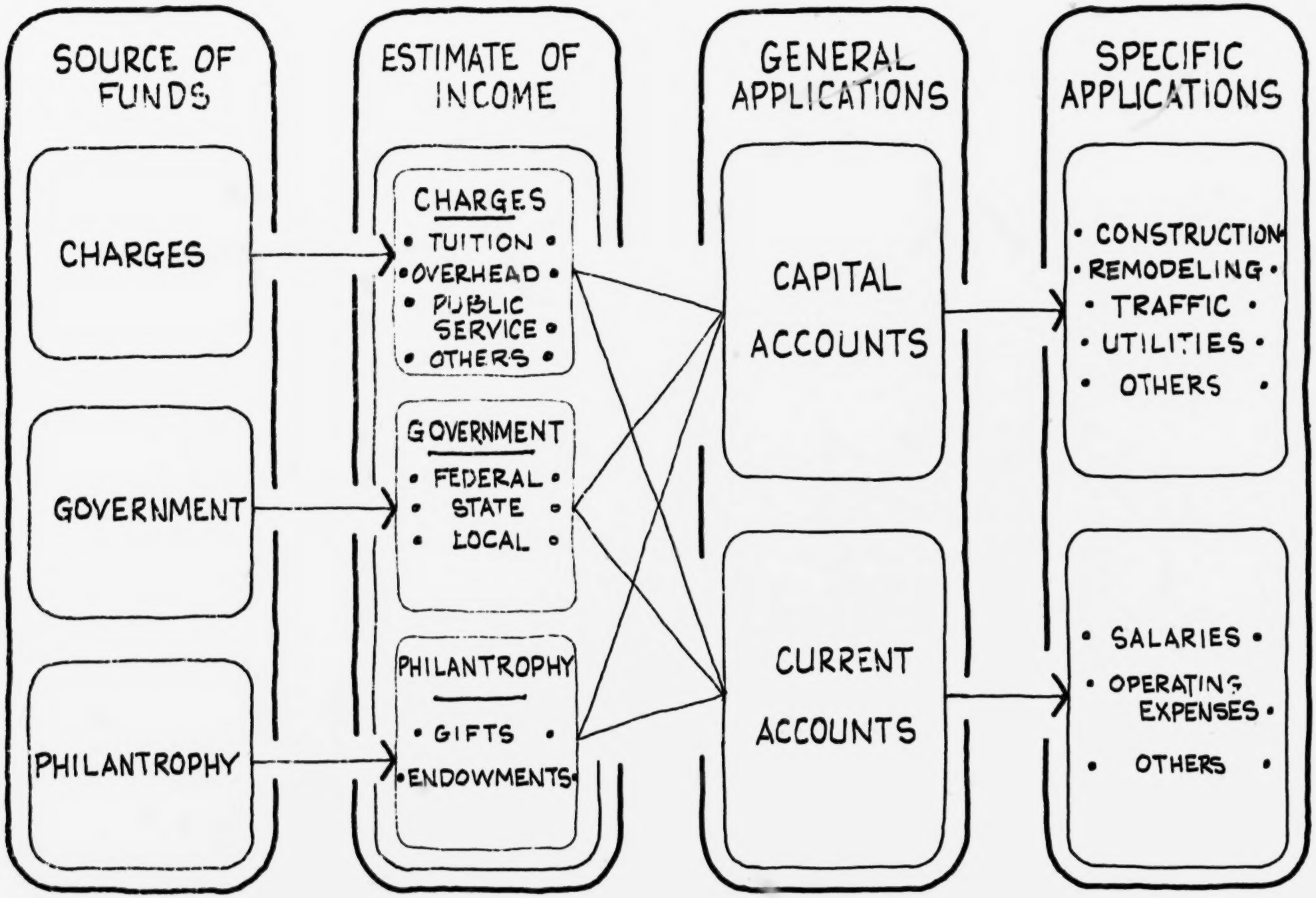
The two basic types of income from this source are (1) direct gifts, and (2) income from endowment funds. There have been many articles devoted to the development and management of these funds which will be of great value in estimating this resource.

Again, the basic approach is to develop techniques for estimating total income and considering the final application of the funds to the capital or operating budget.

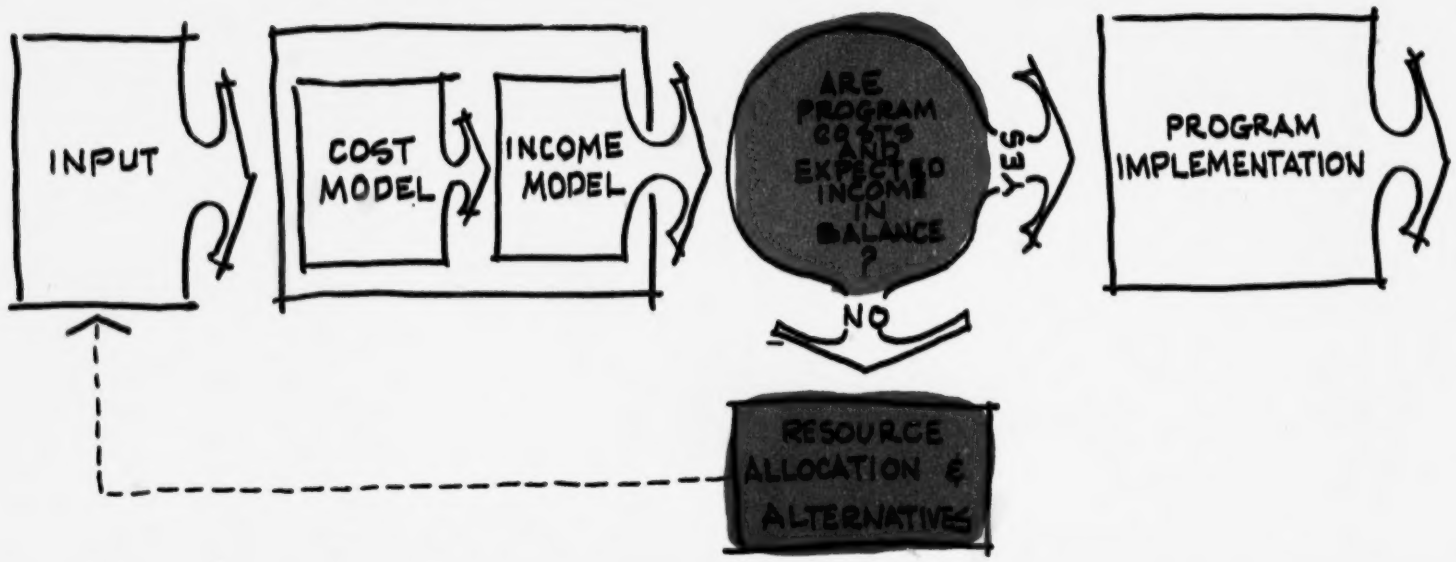
SUMMARY

The basic elements of the income model are shown in Figure 9. This flow diagram emphasizes the identification of the source of funds, the potential amount of funds produced, and the probable or required application of funds.

FIGURE 9 • BASIC ELEMENTS OF INCOME MODEL



FINANCIAL ANALYSIS



The development of good models for the estimation of both future costs and future income will make it possible to conduct a thorough financial study of the future plans of a university. This analysis should consider the probable financial status of the university for as much as ten (10) years into the future.

If projected costs for achieving the objectives of total university plan exceed projected income (and this will no doubt be the prevalent condition during the early stages of plan development), then specific steps must be taken to obtain a balance between cost and income. There are four basic approaches to achieving the desired cost-income balance and these are discussed briefly as follows:

(1) Development of Increased Income - This approach may result in the definition of new objectives and plans of action to increase income. This would include such steps as tuition increases, requests for greater government funding, or increased effort to obtain more funds from gifts or endowments.

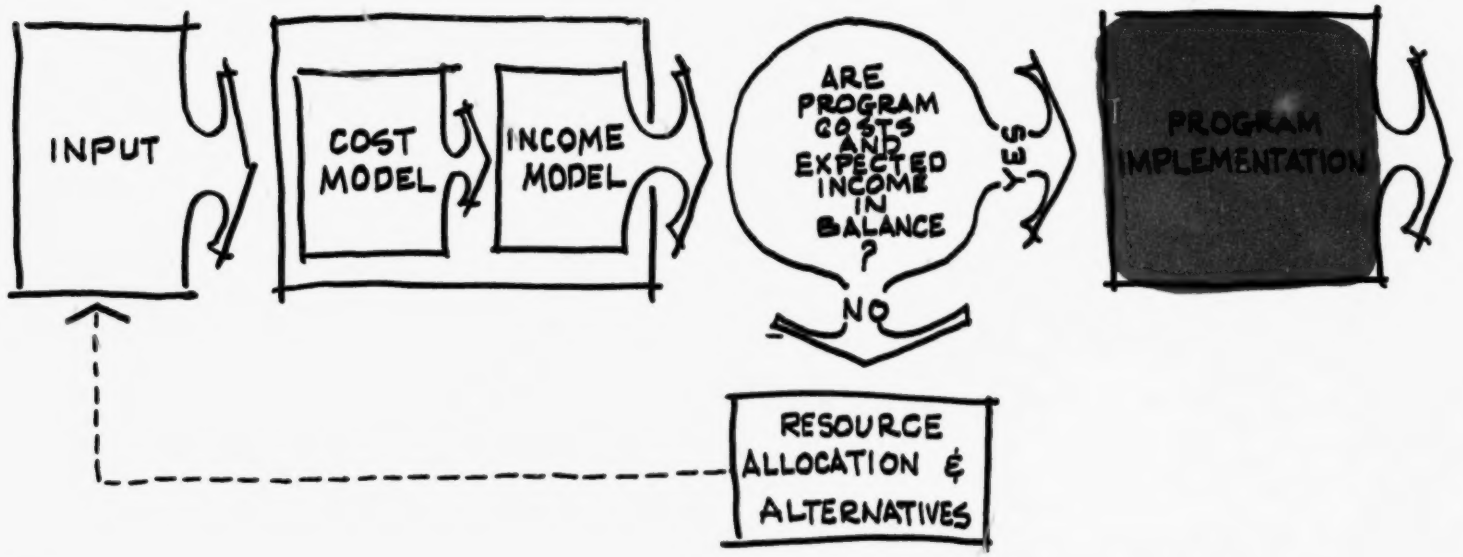
(2) Modification or Elimination of Some University Objectives - This approach requires the determination of the program costs to achieve certain objectives and the establishment of a priority on the objectives. If funds are not available to meet all objectives then some may have to be eliminated.

(3) Examine Less Expensive Means of Obtaining Objectives - This approach requires a thorough examination of the proposed methods of obtaining individual objectives and an evaluation of the costs of alternate methods for achieving the objectives. Examples of possible actions are (1) increase of student-teacher ratio to reduce teaching costs, or (2) increase in the number of hours taught per week to eliminate the need for new classrooms.

(4) Combinations of the Above - This approach is probably the most desirable of all.

The four approaches to the achievement of a cost-income balance strongly indicate that the process of decision making relative to finances and resource allocation in a university requires a more analytical approach than is now being utilized by most universities. The next section of this report will discuss a method which has great potential for providing a desired analytical approach to financial planning.

PLANNING · PROGRAMMING · BUDGETING



The basic purpose of program budgeting is to provide a tool for merging long-range planning and budgeting and a basis for a quantitative presentation of the programs of a university. Once such a quantitative presentation of programs is available, then they can be analyzed relative to their cost, effectiveness, and alternate means of accomplishment.

Object Budget Emphasis	Program Budget Emphasis
On Identifying Objects of Expenditure	On Identifying Fundamental Programs of the University
On What is Being Bought (Means)	On What will be Provided (End or Output)
On Financial Integrity and Fiscal Control	On Management and Efficiency of Operation
On Time Periods in Which Funds are Being Spent	On Present and Future Periods

Table I illustrates the difference in emphasis between ordinary object budgeting and program budgeting. The budget in the program concept becomes more than a financial document and provides the basis for a continuing management process. The program budgeting system promotes total program consideration, is output (or end-product) oriented, identifies points of interdependency among separate budgetary units, and seeks to bring into sharper focus the economic effect of alternatives facing the decision-maker. There is every reason to believe that the concept of the planning-programming-budgeting system presents a very useful approach to the analysis of educational policy and decision-making.

Even a university of moderate size is a sufficiently complicated organization to suggest that the program budgeting framework may be of considerable utility in analyzing problems of choice. But program budgeting represents a marked departure from the traditional techniques used to establish financial resource levels for each component part of the organization. Traditional budgeting techniques are almost universally next-year oriented and are stated entirely in terms of how much financial support will be required during the coming fiscal period. The full impact of a new program is not evident from its first year's budget, but it is generally recognized that departmental fundings once established, are very permanent. It has been stated that, "Neither trustees nor faculty nor administration tend to examine the allocation of funds in the existing budget. Once $250,000 is allocated to paleontology, or $1 million to intercollegiate athletics, these outlays are sacred, and no cut is likely except in the midst of a great depression".[2] Budget justifications, when demanded, are often stated in terms of what prevailing salaries are in other institutions, how poorly the department fared in the competition for scarce finances last year, or other similar measures.

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[2]Seymour E. Harris, *Higher Education: Resources and Finance*, (McGraw Hill, New York, 1962), p 561.

The fundamental question of why the department exists at all is never raised. Little or no indication is given of what the resource inputs to the department are contributing to the overall purposes and objectives of the university. Since the outputs of each budgeted department are not stated, and because budget decisions are made on the basis of evaluating one department at a time, the opportunity for duplication and costly overlap of academic program is constantly present. For example, it is not unusual to find similar courses offered in several different departments.

Traditional budgetary procedures are designed as a primary instrument of control over large, departmentalized organizations. The orientation is completely toward establishing expenditure ceilings which are not to be exceeded by the individual budgetary units. In contrast to this, the program budgeting approach looks upon the problem of determining resource levels as an opportunity to simultaneously plan and control the organization over the next several years, and to integrate the activities of the separate departments into a unified, meaningful program of action.

The program budgeting cycle begins with a high-level consideration of the course of the organization over the next several years. This planning, sometimes referred to as strategic planning, involves the resolution of some fundamental questions of the raison d'etre of the organization in future years. The basic groundwork for this type of approach has been presented in Volume II (Management Planning).

PROGRAMS

One of the immediate conceptual difficulties surrounding the implementation of Planning-Programming-Budgeting (PPB) in a specific institutional framework is the problem of defining major programs. In complex organizations with extensive departmentalization and specialization, it is often difficult to aggregate the many sub-activities into a set of programs that is at once manageable in number and yet does justice to and is consistent with the basic purposes of the organization. The structuring of the Department of Defense into ten major programs, consisting of approximately one thousand program elements, suggests the degree of resolution sought and a reference for other agencies that are implementing PPB.

It seems advantageous to consider the major programs of a university in a manner consistent with the traditional roles of the university. These functions traditionally consist of instruction, research, and public service programs. Also, because of the differences in resource support required, it may be desirable to further differentiate between undergraduate and graduate instructional programs and to treat each as a major program.

The analytical framework for financial analysis discussed earlier lists the following items as major activities of a university:

(1) Instruction
(2) Research
(3) Public Service
(4) Auxiliary Service
(5) Student Aid

The first three activities could be termed the major output programs of the university and the fourth and fifth activities could be termed support programs. Only the major output programs will be discussed in the following material. However, similar techniques could be utilized to analyze the support programs.

INSTRUCTION

This program is simply defined as the program of resident instruction. It may be desirable to further subdivide the instruction program as follows:

(1) Lower Level Instruction
(Freshman, Sophomore)

(2) Upper Level Instruction
(Junior, Senior)

(3) Masters Level Instruction

(4) Ph.D. Level Instruction

The advantage of this further breakdown is that it is applicable to community colleges (Lower Level Only), four year universities (Lower and Upper Level Only), and universities with both undergraduate and graduate instruction programs. It also facilitates the recognition of the differences in costs associated with each of the levels of instruction.

The major disadvantage of the breakdown by level of instruction is the difficulty of isolating the costs of each level. This requires a rather detailed cost accounting system which will not likely be available to most institutions.

RESEARCH

There has been a tendency in the past to avoid the recognition of research as a specific program. This has been pointed out by Dr. Millett as follows:

> "There are some faculty objections to making a financial distinction between instruction and research, and these objections are quite reasonable. Yet the fact is that large-scale research requiring extensive facilities, equipment, supplies, and personnel (either part-time or full-time) is going to be financed primarily by the federal government. Moreover such research is by the nature of things going to be performed primarily by universities. Individual faculty members should have the opportunity to engage in their own personal research activity, and the financial cost of this opportunity should properly be included in the category of instructional expense. We distort the financial realities of our higher education operations, however, when we do not clearly separate instruction from research."[3]

It is reasoned that the resistance to the recognition of research as an entity is hindered by the singular definition of research presently utilized. Research activities of a university should be divided into two broad categories which are:

(1) Academic-Oriented Research or Teaching-Research, and
(2) Sponsored Research

Both of these categories of research have a vital role to play in the long-term growth and development of a university. However, the basic environment within which they are developed is quite different as well as the objectives relative to each category.

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[3]Dr. John D. Millett, "Financing Higher Education," *College and University Business*, Volume 44, (February, 1968), page 46.

In order to better distinguish between the two categories of research, the general features and purposes of each category are given as follows:

Academic-Oriented or Teaching-Research

(1) General Features

(a) Usually oriented to basic research

(b) Generally "person-oriented" rather than "institution oriented"

(c) Generally specific in nature and limited in scope

(d) Generally undiscipline oriented

(e) Closely related to instruction program

(2) Purposes

(a) To advance the technology of a speciality within a given discipline

(b) To provide opportunity for graduate students to participate in a research effort under selected faculty members

(c) To provide an opportunity to teach research methods

(d) To provide an opportunity for individual research as desired by faculty members

Sponsored Research

(1) General Features

(a) More generally oriented to applied rather than basic research

(b) Generally "institution-oriented" rather than "person-oriented"

(c) Broadly based in both approach and scope

(d) Multi-Disciplinary in nature

(2) Purposes

(a) To provide support for a cooperative effort wherein the many disciplines and talents in a university can be brought to bear on a broad problem area

(b) To advance the technology in major problems and to apply this developed technology to the solution of pressing state and national problems

(c) To provide an opportunity for members of the teaching faculty to participate in dynamic and broad-based research programs on a part-time basis

(d) To provide both financial support and research experience under "real-world" conditions to graduate students

(e) To develop the national image of the university to enable the attraction of both quality faculty and students

The first category of research can be termed Teaching-Research and logically fits under the instruction program. It is this second category of research which should be viewed and analyzed as the separate and major research program of a university.

PUBLIC SERVICE

This program would include such activities as continuing education, extension courses, and university assistance to socioeconomic programs of national and international scope. There is every indication that public service will become an even greater category of federal and state expenditures in the near future.

The need and desire for continuing education is growing at an unprecedented rate. Many factors are bringing this situation about, foremost of which is the growing public recognition that economic and social development is inextricably associated with education. Education no longer can be thought of an an item of consumption--it definitely must be regarded as an investment. Continuing education is becoming widely recognized as a necessity for our times.

The progress and development of a community, a state, or a nation is directly linked to the educational achievement of its individual members. The very complexity and interdependence of our economy and our society today requires a high order of understanding of the forces at work. New knowledge is emerging at such a rapid rate that what is regarded as truth today may no longer be regarded as truth tomorrow in the light of newly developed understanding. The values of our culture require continuous re-examination and recodification. Responsible and effective citizenship participation in a democracy requires conscious preparation. Thus the program of public service is undoubtly scheduled for rapid expansion in our universities and will have an increasing impact upon the planning and operation of these institutions.

CONSIDERATIONS

The previous discussion has outlined the major programs of a university. The recognition of this framework of programs is vital to the concept of planning-programming-budgeting. Once a major program is defined and accepted, it then becomes possible to review the financial aspects of the program in a highly analytical manner. It immediately becomes possible to ask and answer such basic questions as follows:

(1) How much is the program costing?
(2) What is the potential income for the program?
(3) How effective is the program in terms of output versus cost?
(4) What are alternate means of conducting the program?

The analytical potential of the program budget approach as contrasted to present methods of looking only at instruction as the product of a university would seem readily apparent.

APPLICATION

The major programs of a university have been identified and a concept of program budgeting has been presented. The next step is to consider techniques for the application of planning-programming-budgeting in an actual university environment. The following sections will present some examples to illustrate such techniques.

PROGRAM ANALYSIS

Figure 10 presents the major components of a management planning and review cycle using the undergraduate program as an example.

Moving counter clockwise, the programming cycle begins and displays the translation of distant objectives into more concrete terms of five year programs. For simplicity, it is assumed that only four undergraduate colleges comprise the undergraduate program. Baccalaureate degrees awarded serve as a measure of the development of each college's undergraduate division. Expansion or contraction may be based on the secular trend of enrollments within each college or deliberate policy considerations.

FIGURE 10• PROGRAM BUDGETING CYCLE

PLANNING

DETERMINE UNIVERSITY OBJECTIVES

- EMPHASIS ON GRADUATE AND UNDERGRADUATE INSTRUCTION
- EMPHASIS ON RESEARCH
- EMPHASIS ON PUBLIC SERVICE
- STANDARDS ON STUDENT-TEACHER RELATIONS · ADMISSION, ENROLLMENT, ETC.

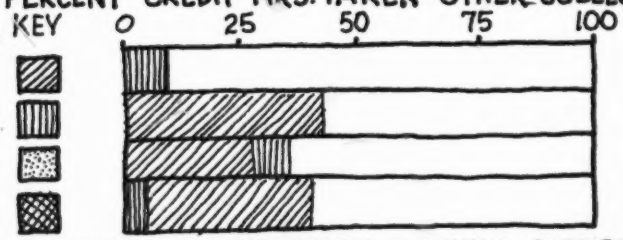
1, 5, AND 10 YEAR PLAN. PERIODS

PROGRAMMING

PROGRAM OBJECTIVES	BACCALAUREATE DEGREES 1968	1969	1970	1971	1972
LIBERAL ARTS	400	450	460	500	525
BUSINESS ADM.	150	150	170	185	200
ENGINEERING	125	150	160	180	200
EDUCATION	325	350	360	360	375
TOTAL	1,000	1,100	1,150	1,225	1,300

PROGRAM INTERDEPENDENCIES

PERCENT CREDIT HRS. TAKEN - OTHER COLLEGES



HATCHED AREA REPRESENTS TEACHING SUPPORT THIS COLLEGE RECIEVES FROM OTHER COLLEGE PROGRAMS

PROGRAM PARAMETERS

STUDENT CREDIT HOURS

	1968	1969	1970	1971	1972
LIBERAL ARTS	95,000	105,000	107,000	121,000	130,000
BUSINESS ADM.	25,000	25,000	29,000	31,500	35,000
ENGINEERING	30,000	34,000	35,000	39,000	42,000
EDUCATION	40,000	44,000	46,000	46,000	49,000
TOTAL	190,000	208,000	217,000	237,000	256,000

BUDGETING

PERSONAL SERVICES ($000 OMITTED)

	1968	1969	1970	1971	1972
LIBERAL ARTS	$1,668.9	$1,936.6	$1,983.9	$2,321.9	$2,526.4
BUSINESS ADM.	364.0	364.0	415.2	484.4	520.8
ENGINEERING	588.1	663.1	703.8	813.4	879.1
EDUCATION	483.9	540.1	585.3	588.5	632.8
TOTAL	$3,104.9	$3,503.8	$3,688.2	$4,208.2	$4,550.1

CLERICAL AND TEACHING ASSISTANTS INCL.
BUDGET IN 1967 DOLLARS

RROGRAM REQMTS.

F.T.E. FACULTY REQMTS.

	1968	69	70	71	72
LIBERAL ARTS	140	162	165	193	208
BUSINESS ADM.	30	30	33	38	41
ENGINEERING	45	51	54	62	67
EDUCATION	45	50	53	53	56
TOTAL	260	293	305	346	372

The interdependencies which exist between colleges are next considered. In this example, the constituent departments of the College of Arts and Sciences are shown as serving a variety of students majoring in other colleges. This is a typical characteristic of undergraduate education since few baccalaureate programs are completely in-house degrees. Mathematics courses for engineering students and psychology courses for education majors are examples of the service aspect some departments render to students housed in a completely separate school. In turn, students majoring in departments of the College of Arts and Sciences may receive their instruction in Economics in a different college. The student interaction matrix, referred to in Volume II, measures departmental interdependency with greater precision, and Figure I merely presents this important concept in the context of a total university planning and review system.

The expected numbers of undergraduate students in each college are next converted into student credit hour requirements and aggregated by each college. Student credit hours are a measure of the number of students in a class times the credit hour value of the course. For example, a three credit hour course with thirty students in it would have a student credit hour value of ninety. Credit hours taught is a standard measure of faculty teaching load, while student credit hours is a more precise definition of instructional output. The credit hour totals in Figure I reflect course demand by students, internal and external, to each college.

Credit hour demands may be converted into faculty staffing requirements using alternative possible student/teacher ratios and standard teaching loads of the faculty. For example, suppose a college expects to teach 6,000 student credit hours in a particular discipline at some future time period. If we define the standard teaching load as twelve hours and class size is planned at 30 students, the average faculty member will teach 360 student credit hours and the undergraduate program will require $\frac{6,000}{360} = 16.7$ or 17 faculty members. An alternative definition of teaching load

as, nine hours and planned class size of 40 students, will result in the same staffing requirements. A wide variety of different combinations of class sizes, and standard teaching loads for the different academic ranks and/or different course levels, may be explored, each combination having a direct effect on instructional cost and staffing needs of the undergraduate program. These are the alternative means of achieving given ends that have important effects on the university's manpower and resource needs.

Faculty staffing needs are directly converted into extended time estimates of personal service budgets for the teaching staff. These estimates may or may not include fixed percentage increases per year and/or incorporate the anticipated effects on salaries resulting from competition in the national market. In this manner, the derived five year program budget for each college incorporates the effects of departmental interdependency in the undergraduate programs as well as university policies in some of the more critical areas of university concern. In its important aspects the features of this planning and review cycle are applicable to a small college as well as to a large university. The essential feature of departmental interdependency with respect to curricula is typical of most, if not all, institutions of higher learning and the PPB system gives explicit recognition and treatment of this characteristic.

In the case of a large university with graduate, research and public service programs, the faculty staffing needs and estimated personal service costs of these programs over five year periods are added to similar costs derived for the undergraduate program. Since Law and Medicine do not require (or provide) academic support to the undergraduate program, resource needs are not now indicated where these schools intersect the Undergraduate Program. These additional programs are usually more self-contained than the undergraduate program and have fewer contact points with other academic departments. However, measuring their output is quite

another matter and depends greatly on the university's policy regarding the emphasis given to each of its major goals. Figure 11 depicts a consolidated program budget structured according to end product and organizational element. The total budget of each college can be broken down according to functional program category and the total salary expenditure by program category can be traced to each academic division. Because the future is uncertain, the five-year estimates should be periodically reviewed and revised in light of current experience.

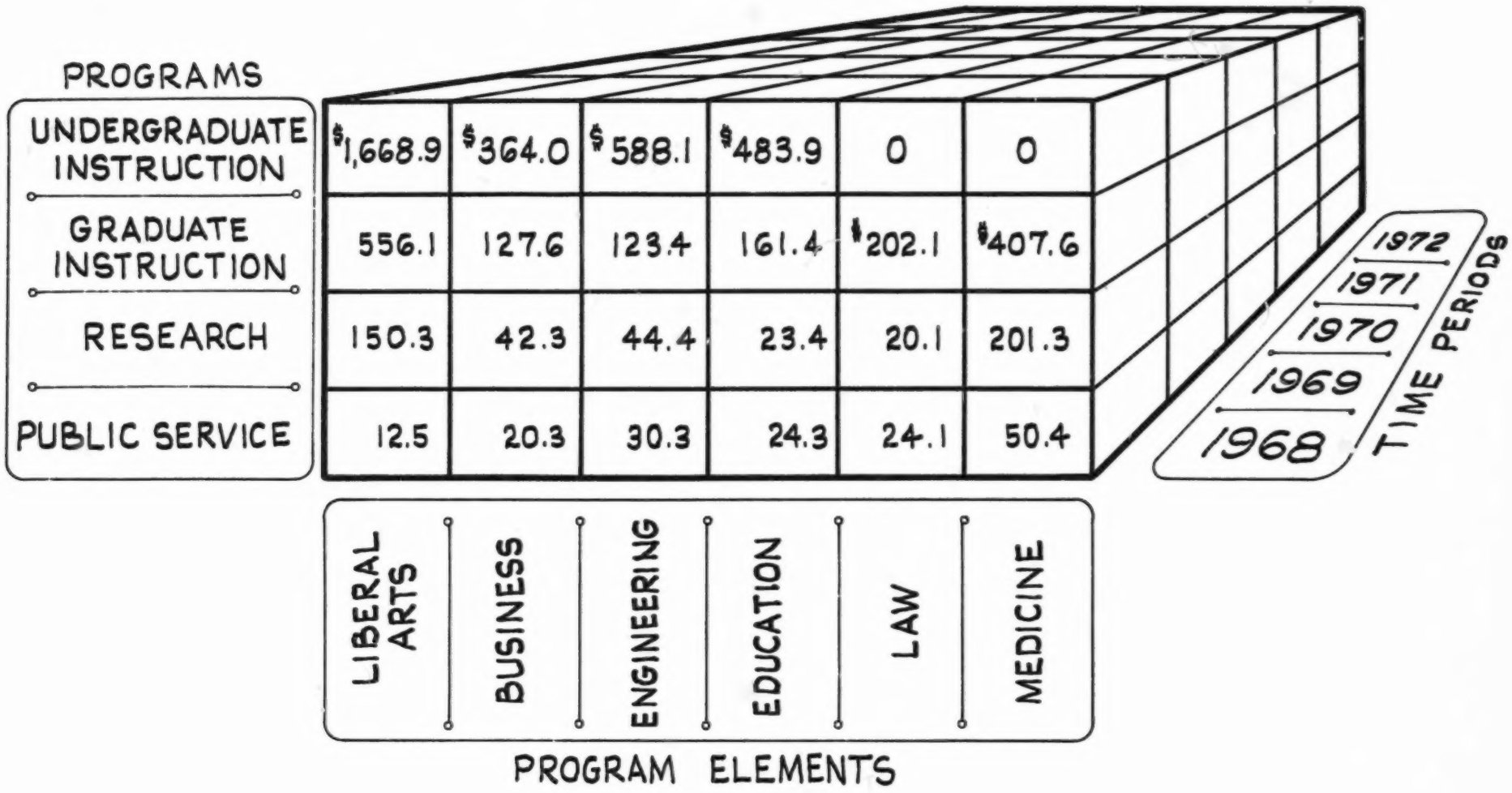
Isolating staffing needs and academic salary costs from other resource categories is useful for investigating a variety of analytic and policy questions that concern most institutions of higher learning. For example, the future estimates of staffing needs have obvious implications for the physical development of the university, (number of laboratories, office space, etc.). No two institutions may agree on the optimum mix between the various programs, but a PPB analysis can quickly apprise policy makers of economic implications of alternative choices in the scale or content of program levels. For example, some policy questions that may be tentatively explored are:

What effect will a fifty percent increase in Engineering undergraduates over the next five years have on staffing needs both within the College of Engineering as well as external departments (Mathematics, English, Physics, etc.) that support the Engineering undergraduate program?

What are the staffing needs of a proposed Master's degree in Social Work? Do they accompany the proposal and are they realistically stated?

What would be the relative costs and payoffs of reallocation of a part of the resources presently devoted to Public Service Programs to other major program areas?

FIGURE 11 • FUNCTIONAL PROGRAM BUDGET BY PROGRAM, PROGRAM ELEMENT AND TIME PERIODS



Individuality and independence are cherished traditions among colleges and universities and it is expected that ultimate decisions and priorities on these questions will vary from one institution to the next. The advantage of the PPB analysis is that it can provide decision makers with realistic and extended time estimates of different policy choices.

Faculty salaries represent one part of operating costs, but in no sense do they describe the full cost of each university program. Other resource needs such as secretarial salaries, library expenditures, current expenses, etc. are added to faculty salaries in order to present a more complete picture of total program costs. To the extent possible, current thinking on this matter is governed by the marginal costing concepts. Each cost element that can be directly traced to each major program and that varies in direct proportion to program levels should be ultimately included in each program cost estimate.

ORGANIZATIONAL CONSIDERATIONS

The preceding planning and review cycle is primarily a supplement to the discussion of broad academic policy issues at the highest administrative level of the university. This echelon includes the governing board, the president, vice-presidents and academic deans. For several reasons the degree of refinement, detailed analysis, initiation and for approval of program changes, and control exercised by this echelon is necessarily limited. For one thing, these are extremely busy executives with very little time available to examine closely the actual expected student registrations for each course in the catalogue. For another, most central administrations have been reluctant to add additional "unproductive" staff members when the

academic departments stand in higher need of additional support.[4] Finally, the tradition of independence among scholars is likely to dissuade any central administrative group from attempting to too closely monitor the affairs of a specific department. For these reasons, the programming phase of the cycle is best restricted to establishing broad, university-wide policy questions and necessary resource estimates for each program. The specific allocation of resources within a particular institution is best left to the discretion of the dean. In the idiom of PPB analysis, this is the specification of "thresholds" or desired levels of mixes in each major program category.

The concept of thresholds is very similar to the exception principle of traditional management theory. A preferred mix between teaching and research programs may be established as an overall university policy. The specific pattern of resource allocation within any department may deviate by some degree from this ratio, provided that the overall allocation of resources is somewhere near the preferred mix. The present and future resource implications of new research or academic program proposals must be considered in the light of these preferred mixes, and programs that promise to unbalance the overall ratio must be carefully weighed.

The emphasis given each program is a highly personal institutional decision. Each institution must order its priorities in the light of the demands of its specific clients and after a realistic appraisal of its capacities in each program area.

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[4]Although Williams, *op. cit.*, builds a very strong case for creation of an Analytical Studies Group responsible to the chief academic officer of the university.

Federal or other external sources of support for academic programs or research proposals are not equal in the opportunities presented to the different academic disciplines. For example, the opportunities for extra-university support for Physics or Mathematics programs are more numerous than English or History. Assuming all of these departments are housed in a single school of Arts and Sciences, deans may restore some measure of balance by approving sabbatical leaves for senior professors in the latter departments since external support for research in former departments is relatively more abundant. (This is not to suggest that such a rewards system is not already in effect; casual observation suggests that it may already be. PPB analysis simply institutionalizes the decision-making system.) The flexibility of PPB as a planning and decision-making system is such that while the specific pattern of resource allocation may vary from one institution to the next, the iterative program-review and decision-making cycle over five-year programming periods is essentially the same.

COST-EFFECTIVENESS ANALYSIS

An essential element of PPB systems is the requirement that alternative causes of action are subjected to cost/effectiveness (or cost/benefit; cost/utility) analysis. Cost/effectiveness analyses are generally of two types:

(a) Given a condition of fixed resources, search for the alternative (or combination of alternatives) that maximizes utility or "effectiveness."

(b) Given a specified objective, search for the method of achieving it at the least cost.

Since PPB is a form of economic analysis, and economic analysis is only a way of looking at problems of choice, it is inevitable that the question of utility, objectives, or effectiveness will eventually arise. However, rather than rigorous and sophisticated economic analysis, it has been suggested that the implementation of PPB systems will be attended by two forms of cost effectiveness analysis - less rigorious and in-depth analysis.[5]

Less rigorous analysis consists of a dialogue between the important participants in the decision-making structure of an institution of higher learning. This generally includes the provost and the president, academic deans, chairmen and key professiorial personnel. The relatively flat organization structure typical of most colleges and universities should facilitate this dialogue while the constant requirement of consideration of the economic consequence of each alternative should render this debate more meaningful and focal. A sense of economy lends rigor and precision to dialogue, and PPB analysis requires the explicit consideration of resource requirements of alternatives. This dialogue, conducted annually, is the instrument by which orderly progression toward distant goals is achieved. The product of this discussion is a ranking of priorities, time-phased in their accomplishment with the best possible estimates of their resource needs. Future enrollment estimates of students in the various graduate and undergraduate programs, provided by the student interaction matrix, will assist university administrations in discerning between the postponable policy choices and those which are negotiable or may be delayed.

In this connection it should be noted that while ten years is often suggested as the interval between a general curriculum review and institutional self-study, the adoption of a PPB framework for academic planning will emphasize the need for a continuous process of evaluation or

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[5]Harry P. Hatry, *Criteria for Evaluation in Planning State and Local Programs*, Subcommittee on Intergovernmental Relations, Senate Committee on Government Operations, (GPO, Washington, D.C., 1967).

review. Departmental proposals for the addition or deletion of specific course requirements for degree candidates are customarily justified on the educational merits of the proposal. PPB analysis does not change this process in its essential respects but merely introduces a framework in which incremental changes in program content, originating from anyone of a variety of departments, may be arrayed and evaluated in terms of their overall effect on the departments affected. Departmental resource needs are modified accordingly. As undergraduate degree options exceed one hundred and student enrollments approach 10,000 or more, the need for some type of framework to systematically appraise the effects of these changes becomes increasingly obvious. Furthermore, in this age of rapid rates of obsolescence in many technical and scientific professions, the need for a more constant monitoring and modifying system of academic review is obvious enough.

Examples of cost-effectiveness studies in higher education, involving more formal analysis of cost/benefit estimation and program effectiveness, are more difficult to come by. Discounted lifetime earnings is a commonly used measure of evaluating educational effectiveness, but for a variety of reasons, incomes earned by alumni would not be accepted as an appropriate criterion by most educators. Also, most of these studies concentrate on the income effects resulting from the achievement of specific educational levels rather than the composition of the education itself. Academic plans, and the resource consideration they engender, largely concern the latter.

Cost/Effectiveness analysis has as its sole objective the hope of providing management with a better understanding of the expected outcomes of the decisions that confront them. While analyses of this sort is at a primitive stage in higher education at the present time, with patience and consistent application of the technique, sharper more informed judgments in the future are possible.

SUMMARY

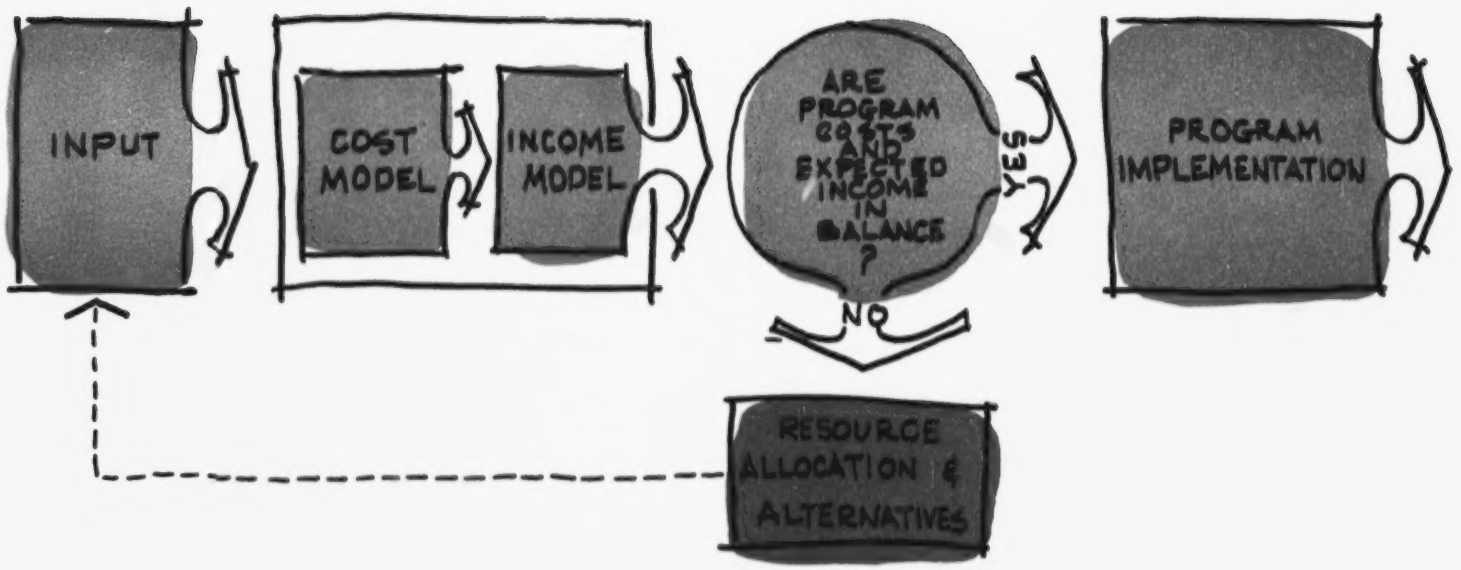
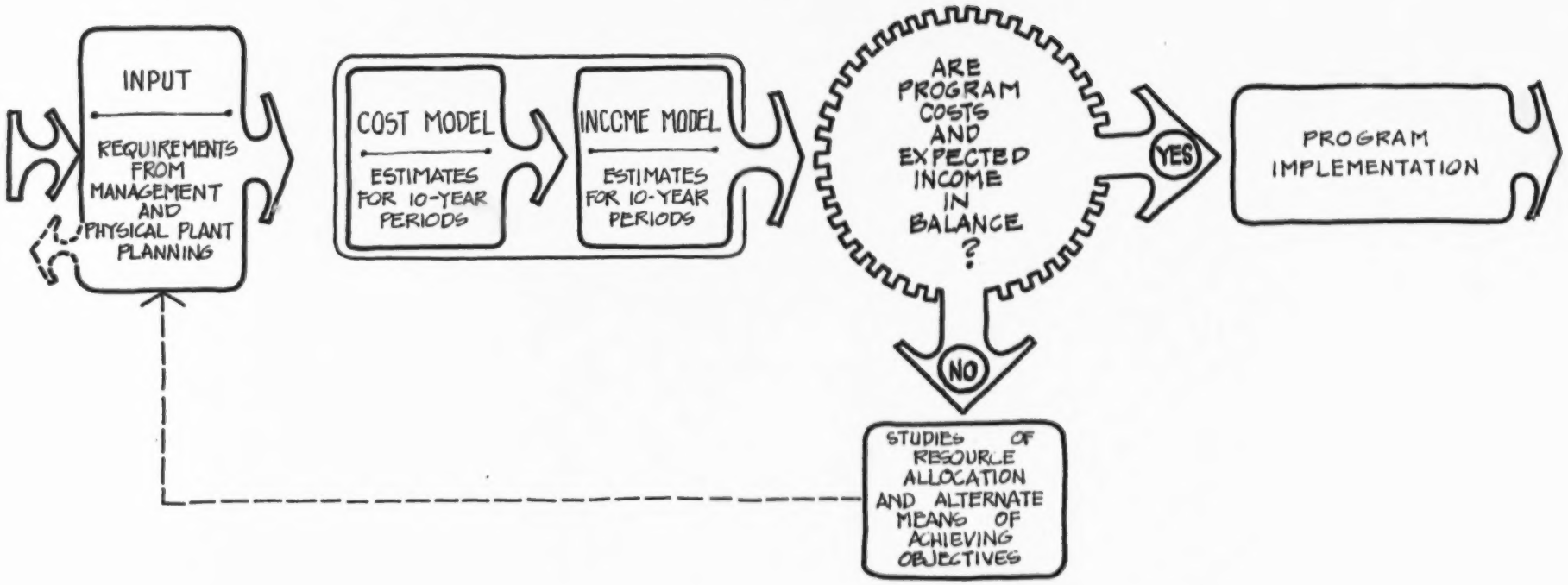

INPUT
COST MODEL
INCOME MODEL
ARE PROGRAM COSTS AND EXPECTED INCOME IN BALANCE ?
YES
NO
PROGRAM IMPLEMENTATION
RESOURCE ALLOCATION & ALTERNATIVES

Figure 12 illustrates the total financial planning process that has been discussed in the previous sections. This figure will no doubt create the impression of an over-simplification of a very complex process. It is easy, however, to assume an over complicated viewpoint and lose sight of the basic job which must be done in financial planning. Stated simply (as in the case of the illustration) the process must establish good techniques for estimating future costs and income, and provide a thorough, analytical procedure for achieving a cost-income balance. The procedures involved are complex but the basic task is simple and fundamental to proper planning.

The basic contributions which these guidelines have attempted to make are summarized as follows:

(1) A framework within which a thorough financial analysis can be made.
(2) A total planning system which lends itself to strong financial analysis.
(3) A suggested approach to the total process of planning-programming-budgeting.

FIGURE 12· FINANCIAL PLANNING PROCESS



APPENDIX

Historical Analysis Forms 1-12

Projection Analysis Forms 13-16

Requirements Analysis Forms 17-26

DEPARTMENTAL PLANNING REPORT FORM 1

DEPARTMENT Sample Department

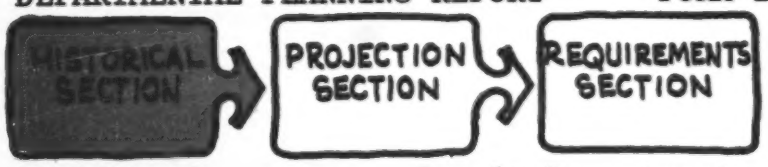
ENROLLMENT REPORT

Departmental Majors

Fall Semester

Year	Undergraduate						Graduate			Grand Total
	Freshmen	Sophomore	Junior	Senior	5th	Sub Total	Master	Ph.D	Sub Total	
1966-67	33	36	39	65		173	30	25	55	228
1967-68	42	43	35	58		178	28	28	56	234
1968-69										
1969-70										
1970-71										
1971-72										
1972-73										
1973-74										
1974-75										
1975-76										
1976-77										
1977-78										
1978-79										

DEPARTMENTAL PLANNING REPORT FORM 2



DEPARTMENT Sample Department

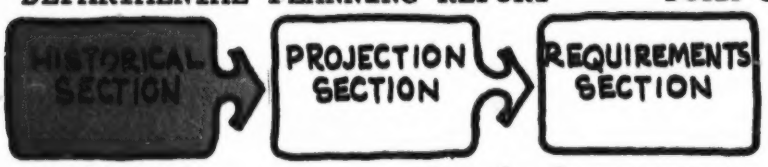
TEACHING LOAD SUMMARY

Year 1966-67*

Course Level	Fall Semester			Spring Semester			1st SS	2nd SS	Total Annual Student Credit Hours
	Student Credit Hours	Student Contact Hours		Student Credit Hours	Student Contact Hours		Student Credit Hours	Student Credit Hours	
		Lecture	Lab		Lecture	Lab			
100	165	150	30	160	140	25	90	85	500
200	500	450	80	490	440	80	260	250	1500
300	730	700	110	710	700	100	390	370	00
400 & 500	930	890	200	900	870	190	490	480	2800
Sub-Total	2325	2190	420	2260	2150	395	1230	1185	7000
600	1000	950	100	990	940	90	510	500	3000
Grand Total	3325	3140	520	3250	3090	485	1740	1685	10,000

DEPARTMENTAL PLANNING REPORT FORM 3

STAFF SUMMARY



Professional Category

DEPARTMENT Sample Department

Year	Full Time Equivalents (F.T.E.)			Summary		Average Salary
	Teaching	Research	Public Service	Total Number of Staff	Total F.T.E.	
1966-67	12.8	9.6	1.2	28	23.6	$14,000
1967-68	14.2	10.1	1.3	30	25.6	$14,200
1968-69						
1969-70						
1970-71						
1971-72						
1972-73						
1973-74						
1974-75						
1975-76						
1976-77						
1977-78						
1978-79						

DEPARTMENTAL PLANNING REPORT FORM 4

STAFF SUMMARY

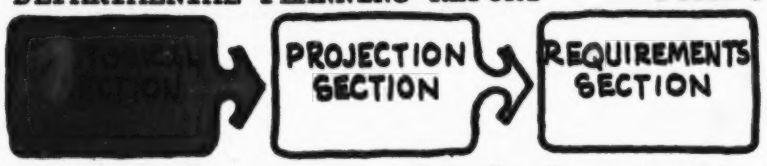
Graduate Assistant Category

DEPARTMENT Sample Department

Year	Full Time Equivalents (F.T.E.)			Summary		Average Salary
	Teaching	Research	Public Service	Total Number of Staff	Total F.T.E.	
1966-67	4.5	3.5	--	16	8.0	$6,000
1967-68	5.0	4.0	--	18	9.0	$6,000
1968-69						
1969-70						
1970-71						
1971-72						
1972-73						
1973-74						
1974-75						
1975-76						
1976-77						
1977-78						
1978-79						

DEPARTMENTAL PLANNING REPORT FORM 5

STAFF SUMMARY



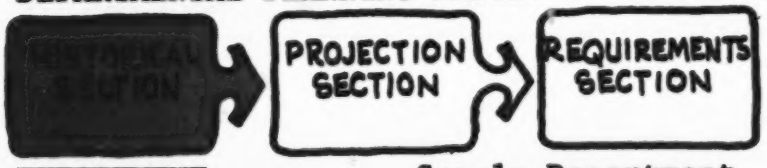
Support Category

DEPARTMENT Sample Department

Year	Full Time Equivalents (F.T.E.)			Summary		Average Salary
	Teaching	Research	Public Service	Total Number of Staff	Total F.T.E.	
1966-67	2.0	4.5	1.0	10	7.5	$3,800
1967-68	2.5	5.3	1.2	12	9.0	$3,900
1968-69						
1969-70						
1970-71						
1971-72						
1972-73						
1973-74						
1974-75						
1975-76						
1976-77						
1977-78						
1978-79						

DEPARTMENTAL PLANNING REPORT FORM 6

STAFF SUMMARY



Hourly Category

DEPARTMENT Sample Department

Year	Full Time Equivalents (F.T.E.)			Summary		Average Salary
	Teaching	Research	Public Service	Total Number of Staff	Total F.T.E.	
1966-67	---	3.0	---	8	3.0	$2,400
1967-68	---	4.3	---	10	4.3	$2,400
1968-69						
1969-70						
1970-71						
1971-72						
1972-73						
1973-74						
1974-75						
1975-76						
1976-77						
1977-78						
1978-79						

DEPARTMENTAL PLANNING REPORT FORM 7

RESEARCH BUDGET REPORT

Year 1966-67*

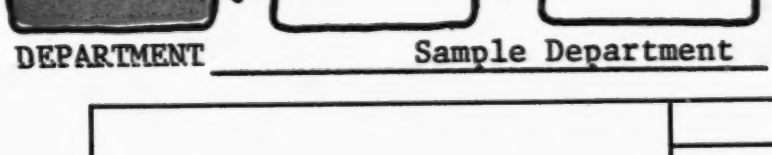
DEPARTMENT Sample Department

Activity Identification	Annual Budget for Personal Services	Annual Budget for Capital Expenditures	Annual Budget for Other Expenses	Total Annual Budget
H.E.W. Grant	150,000	20,000	10,000	180,000
N.S.F. Grant	29,700	---	2,300	32,000

*Note - Complete one of the above forms for each year of desired history

DEPARTMENTAL PLANNING REPORT FORM 8

RESEARCH STAFF REPORT



Year 1966-67*

DEPARTMENT Sample Department

Activity Identification	Full Time Equivalents (F.T.E.)			
	Professional	Graduate Assistant	Support Staff	Hourly
H.E.W. Grant	6.3	3.0	3.0	3.0
N.S.F. Grant	3.3	0.5	1.5	---

* Note - Complete one of the above forms for each year of desired history

DEPARTMENTAL PLANNING REPORT FORM 9

PUBLIC SERVICE BUDGET REPORT

Year 1966-67*

DEPARTMENT Sample Department

Activity Identification	Annual Budget for Personal Services	Annual Budget for Capital Expenditures	Annual Budget for Other Expenses	Total Annual Budget
Short Course Presentation	20,600	2,000	3,000	25,600

* Note - Complete one of the above forms for each year of desired history

DEPARTMENTAL PLANNING REPORT FORM 10

PUBLIC SERVICE STAFF REPORT

Year 1966-67*

DEPARTMENT Sample Department

Activity Identification	Full Time Equivalents (F.T.E.)			
	Professional	Graduate Assistant	Support Staff	Hourly
Short Course Presentations	1.2	---	1.0	---

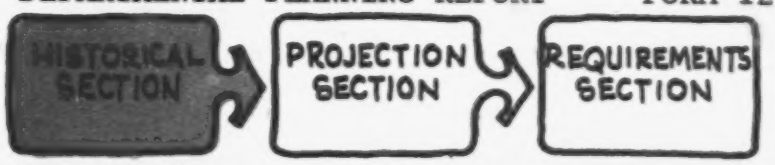
* Note - Complete one of the above forms for each year of desired data

DEPARTMENTAL PLANNING REPORT FORM 11 BUDGET REPORT

DEPARTMENT Sample Department

Year	Budget for Personal Services			Budget for Capital Expenditures			Budget for Other Expenses		
	Teaching	Research	Pub. Ser.	Teaching	Research	Pub. Ser.	Teaching	Research	Pub. Ser.
1966-67	213,800	179,700	20,600	10,000	20,000	2,000	10,000	12,300	3,000
1967-68	241,390	198,410	23,140	14,000	26,000	3,000	12,000	14,000	3,500
1968-69									
1969-70									
1970-71									
1971-72									
1972-73									
1973-74									
1974-75									
1975-76									
1976-77									
1977-78									
1978-79									

DEPARTMENTAL PLANNING REPORT FORM 12 BUDGET SUMMARY



DEPARTMENT Sample Department

Year	Budget Total			Grand Total
	Teaching	Research	Pub. Ser.	
1966-67	233,800	212,000	25,600	471,400
1967-68	267,390	240,410	29,640	537,440
1968-69				
1969-70				
1970-71				
1971-72				
1972-73				
1973-74				
1974-75				
1975-76				
1976-77				
1977-78				
1978-79				

DEPARTMENTAL PLANNING REPORT FORM 13

ENROLLMENT PROJECTION

HISTORICAL SECTION → PROJECTION SECTION → REQUIREMENTS SECTION

Departmental Majors

Fall Semester

DEPARTMENT Sample Department

Year	Undergraduate						Graduate			Total
	Freshman	Sophomore	Junior	Senior	5th	Sub Total	Master	Ph.D.	Sub Total	
1968-69	45	46	37	62		190	30	30	60	250
1973-74	56	57	47	77		237	38	41	79	316
1978-79	67	68	56	92		283	50	54	104	387

DEPARTMENTAL PLANNING REPORT FORM 14

TEACHING LOAD PROJECTION

HISTORICAL SECTION → PROJECTION SECTION → REQUIREMENTS SECTION

Year 1973-74*

DEPARTMENT Sample Department

Course Level	Total Annual Student Credit Hours	Fall Semester Student Contact Hours	
		Lecture	Lab
100	625	190	38
200	1875	560	100
300	2750	880	138
400 & 500	3500	1110	250
Sub-Total	8750	2740	526
600	3750	1250	130
Grand Total	12,500	3990	656

DEPARTMENTAL PLANNING REPORT FORM 15 RESEARCH PROJECTION

DEPARTMENT Sample Department

Year	F.T.E. Professional Category	F.T.E. Graduate Asst. Category	F.T.E. Support Category	F.T.E. Hourly Category	Total Annual Budget
1968-69	8.2	4.1	5.3	3.4	260,500
1973-74	12.8	6.5	7.3	5.2	336,760
1978-79	18.9	13.4	14.8	12.1	675,000

DEPARTMENTAL PLANNING REPORT FORM 16 PUBLIC SERVICE PROJECTION

DEPARTMENT Sample Department

Year	F.T.E. Professional Category	F.T.E. Graduate Asst. Category	F.T.E. Support Category	F.T.E. Hourly Category	Total Annual Budget
1968-69	2.1	-0-	1.6	-0-	35,200
1973-74	2.5	---	2.0	1.0	58,900
1978-79	5.1	2.4	7.2	3.5	225,000

DEPARTMENTAL PLANNING REPORT FORM 17 PERSONAL SERVICES REQUIREMENTS

HISTORICAL SECTION → PROJECTION SECTION → REQUIREMENTS SECTION

Professional Category

DEPARTMENT Sample Department

Year	Full Time Equivalents (F.T.E.)				Average Annual Salary	Budget Requirement		
	Teaching	Research	Pub. Ser.	Total		Teaching	Research	Pub. Ser.
1968-69	9.1	8.2	-0-	17.3	11,500	104,650	94,300	-0-
1973-74	18.4	12.8	2.5	33.7	15,000	276,000	192,000	37,500
1978-79	28.4	18.9	5.1	52.4	18,000	511,200	340,200	91,800

DEPARTMENTAL PLANNING REPORT FORM 18 PERSONAL SERVICES REQUIREMENTS

HISTORICAL SECTION → PROJECTION SECTION → REQUIREMENTS SECTION

Graduate Assistant Category

DEPARTMENT Sample Department

Year	Full Time Equivalents (F.T.E.)				Average Annual Salary	Budget Requirement		
	Teaching	Research	Pub. Ser.	Total		Teaching	Research	Pub. Ser.
1968-69	3.2	4.1	-0-	7.3	4,000	12,800	16,400	-0-
1973-74	7.0	6.5	-0-	13.5	7,000	49,000	45,000	---
1978-79	13.5	13.4	2.4	29.3	9,000	121,500	120,600	21,600

DEPARTMENTAL PLANNING REPORT FORM 19 PERSONAL SERVICES REQUIREMENTS

HISTORICAL SECTION → PROJECTION SECTION → REQUIREMENTS SECTION

Support Staff Category

DEPARTMENT Sample Department

Year	Full Time Equivalents (F.T.E.)				Average Annual Salary	Budget Requirement		
	Teaching	Research	Pub. Ser.	Total		Teaching	Research	Pub. Ser.
1968-69	1.2	5.3	-0-	6.5	3,800	4,560	20,140	-0-
1973-74	3.2	7.3	2.0	12.5	4,200	13,440	30,660	8,400
1978-79	5.6	14.8	7.2	27.6	4,800	26,880	71,040	34,560

DEPARTMENTAL PLANNING REPORT FORM 20 PERSONAL SERVICES REQUIREMENTS

HISTORICAL SECTION → PROJECTION SECTION → REQUIREMENTS SECTION

Hourly Category

DEPARTMENT Sample Department

Year	Full Time Equivalents (F.T.E.)				Average Annual Salary	Budget Requirement		
	Teaching	Research	Pub. Ser.	Total		Teaching	Research	Pub. Ser.
1968-69	0.5	3.4	-0-	3.9	2,500	1,250	8,500	-0-
1973-74	1.5	5.2	1.0	7.7	3,000	4,500	15,600	3,000
1978-79	3.0	12.1	3.5	18.6	3,500	1,050	42,350	12,250

DEPARTMENTAL PLANNING REPORT FORM 21

SPACE REQUIREMENTS

HISTORICAL SECTION → PROJECTION SECTION → REQUIREMENTS SECTION

Teaching Facilities

DEPARTMENT Sample Department

Year	Classroom Space			Teaching Lab Space		
	Fall Semester Student Contact Hours-Lecture	Space Factor	Space Requirement	Fall Semester Student Contact Hours-Lab	Space Factor	Space Requirement
1968-69	2,250	1.0	2,250	370	3.0	1,110
1973-74	3,990	0.9	3,591	656	2.5	1,640
1978-79	6,830	0.8	5,464	1,123	2.0	2,246

DEPARTMENTAL PLANNING REPORT FORM 22

SPACE REQUIREMENTS

HISTORICAL SECTION → PROJECTION SECTION → REQUIREMENTS SECTION

Non-Teaching Facilities

DEPARTMENT Sample Department

Year	Office Space	Support Space	Conference Space	Research Laboratory	Public Service Facilities	Special Uses	Storage and Service	Grand Total
1968-69	3,298	910	346	2,050	-0-	900	375	7,879
1973-74	6,338	1,760	674	3,210	125	1,180	665	13,952
1978-79	10,852	3,966	1,048	5,120	351	1,416	1,138	23,891

DEPARTMENTAL PLANNING REPORT FORM 23

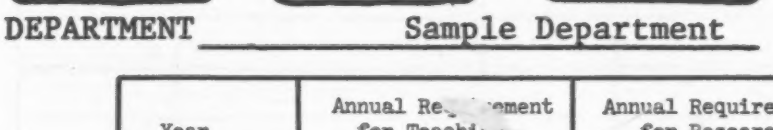
CAPITAL EXPENDITURE REQUIREMENTS

DEPARTMENT Sample Department

Year	Annual Budget for Teaching	Annual Budget for Research	Annual Budget for Public Service	Total Annual Budget for Capital Expenditures
1968-69	12,000	10,000	3,000	27,000
1973-74	20,000	32,000	5,000	57,000
1978-79	28,000	100,000	10,000	138,000

DEPARTMENTAL PLANNING REPORT FORM 24

OTHER EXPENSE REQUIREMENTS



DEPARTMENT Sample Department

Year	Annual Requirement for Teaching	Annual Requirement for Research	Annual Requirement for Pub. Ser.	Total Annual Requirement
1968-69	8,000	5,000	2,000	15,000
1973-74	16,000	21,000	5,000	42,000
1978-79	22,000	35,000	8,000	65,000

DEPARTMENTAL PLANNING REPORT FORM 25

BUDGET REQUIREMENTS

DEPARTMENT Sample Department

Year	Budget for Personal Services			Budget for Capital Expenditures			Budget Other Expenses		
	Teaching	Research	Pub. Ser.	Teaching	Research	Pub. Ser.	Teaching	Research	Pub. Ser.
1968-69	123,260	139,340	-0-	12,000	10,000	3,000	8,000	5,000	2,000
1973-74	342,940	283,760	48,900	20,000	32,000	5,000	16,000	21,000	5,000
1978-79	660,630	574,190	160,210	28,000	100,000	10,000	22,000	35,000	8,000

DEPARTMENTAL PLANNING REPORT FORM 26

SUMMARY BUDGET REQUIREMENTS

DEPARTMENT Sample Department

Year	Budget Total			Grand Total
	Teaching	Research	Pub. Ser.	
1968-69	143,260	154,340	5,000	302,600
1973-74	378,940	336,760	58,900	774,600
1978-79	710,630	709,190	178,210	1,598,030

ADDITIONAL VOLUMES

The following outlines describe the additional volumes in the series on Planning Guidelines:

VOLUME I - PLANNING SYSTEM

I. Introduction
   - A. Background
   - B. Planning Requirements
   - C. Project Scope
   - D. Project Organization
   - E. Project Presentation
   - F. Time Span
   - G. Community Considerations

II. Management and Program Planning
   - A. University Objectives
   - B. Program Plans and Requirements
   - C. Planning Report • Academic Departments
   - D. College Summary
   - E. Planning Report • Research and Public Service and/or Extension
   - F. Planning Report • Support Organizations
   - G. University Summary

III. Physical Plant Planning
   - A. Facilities Planning
   - B. Traffic Planning
   - C. Utilities Planning
   - D. Land Use Planning
   - E. Physical Plant Planning Process

IV. Financial Planning
   - A. Multi-Year Budgets
   - B. Financial Evaluation
   - C. Cost Estimation
   - D. Income Estimation
   - E. Planning-Programming-Budgeting

V. Total University Plan

VI. Continuous Planning System
   - A. Dynamic Planning
   - B. Organization

VII. Summary

VOLUME III - PHYSICAL PLANT PLANNING • LAND USE AND TRAFFIC

I. Introduction
- A. Land Use
- B. Traffic

LAND USE PLANNING SECTION

II. Introduction

III. Basic Determinants - Information Inputs
- A. Management
- B. Financial
- C. Physical

IV. Basic Determinants - Investigation, Analysis and Program Development
- A. Problem Identification
- B. Planning Assumptions

V. Design Factors - Evaluation, Testing and Selection
- A. Tangible Design Factors
- B. Intangible Design Factors

VI. Land Use Plan - Synthesis
- A. Land Use Scales
- B. Land Use Alternatives
- C. Land Use Plan

VII. Detail Design and Implementation

VIII. Continuing Planning

TRAFFIC PLANNING SECTION

IX. Introduction
- A. Conditions
- B. Basic Elements

X. Access
- A. Street System Inventory
- B. Traffic Characteristics
- C. Traffic Assignment

XI. Internal Circulation
- A. Street Inventory
- B. Characteristics of Pedestrian Movement

XII. Parking
- A. Supply Inventory
- B. Characteristics Study
- C. Future Types

XIII. Special Events
- A. Attendance
- B. Routing
- C. Control Coordination

XIV. Traffic Plan
- A. Analysis of Results
- B. Construction of Facilities
- C. Control Plan

VOLUME IV - PHYSICAL PLANT PLANNING • FACILITIES STUDIES

I. Introduction
   A. Problem
   B. Required Studies
   C. Presentation
II. Inventory of Existing Facilities
   A. Requirements
   B. Facilities Manual - U.S. Office of Education
   C. Special Requirements
III. Utilization of Teaching Facilities
   A. Considerations
   B. Utilization Measurements
   C. Reporting
IV. Estimation of Space Requirements
   A. Teaching Facilities
   B. Non-Teaching Facilities
V. Utilization of Non-Teaching Facilities
   A. Considerations
   B. Organizational Unit - Space Inventory
   C. Proration System
   D. Utilization Evaluation
VI. Automated Assignment of Teaching Facilities
   A. Master Schedule Construction
   B. Student Sectioning
   C. Summary
VII. Quality Analysis of Existing Facilities
   A. Physical Analysis
   B. Cost Analysis
   C. Intangible Analysis
   D. Rating System
VIII. Residential Housing Study
   A. Single Students
   B. Married Students
   C. Faculty-Staff
   D. Community Resources
IX. Facilities Planning System
   A. Flow Diagram
   B. Output

VOLUME V - PHYSICAL PLANT PLANNING · UTILITY STUDIES

I. Introduction

II. Energy Utilities
- A. Chilled Water
- B. Water Heating Systems
- C. Steam
- D. Condenser Water
- E. Electric Lighting and Power

III. Distribution Systems
- A. Central Utilities Plant
- B. Central Plant Distribution Systems
- C. Controls for Central Utilities Plants
- D. Total Energy Plants

IV. Service Utilities
- A. Water
- B. Sewerage System
- C. Surface Drainage
- D. Domestic Hot Water
- E. Compressed Air

V. Communication Systems
- A. Telephone Systems
- B. Telegraph
- C. Radio
- D. Pneumatic Tube Systems
- E. Clock and Signal Systems
- F. Data Reclaim Systems

VI. Summary